

GOVERNMENT OF THE
GOLD COAST.

Report

ON THE

MEDICAL DEPARTMENT

FOR THE YEAR

1921.

GOLD COAST:

GOVERNMENT PRESS, ACCRA.

1922.

With the compliments of the Director
of Medical and Sanitary Services
Gold Coast Colony.

Annual Report on the Medical
Department for the year, 1921.

Medical Department,
P.O.Box 138,
Victoriaborg, Accra,
Gold Coast Colony,
February, 1923.

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Report ON THE **MEDICAL DEPARTMENT** FOR THE YEAR 1921.

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ANNUAL REPORT FOR THE YEAR ENDING DECEMBER, 1921.

I.—ADMINISTRATION.

TABLE 1.—MEDICAL STAFF AT 31st DECEMBER, 1921.

	1	Director of Medical and Sanitary Services.
	1	Deputy Director of Medical and Sanitary Services.
	1	Deputy Director of Sanitary Services.
	1	Director of Medical Research.
	1	Assistant Director of Medical Service.
	1	Specialist Medical Officer.
	4	Senior Medical Officers.
	2	Senior Sanitary Officers.
	1	Pathologist
	37	Medical Officers, six of whom are Medical Officers of Health.
	1	Radiologist.
	1	African Medical Officer.
33 Vacancies	{	1 Assistant Director of Medical Service.
		1 Specialist Medical Officer.
		2 Senior Medical Officers.
		2 Pathologists.
		3 Assistant Pathologists.
		16 Medical Officers.
		4 Women Medical Officers.
		4 African Medical Officers.
	2	Dental Surgeons.
	1	Analytical Chemist.
	1	Office Assistant and Accountant.
	1	Dispenser's Instructor.
	1	Medical Storekeeper.
	4	Superintendent Sanitary Inspectors.
	1	Laboratory Assistant.

EUROPEAN NURSING STAFF.

4	Senior Nursing Sisters.
8	Nursing Sisters.

CLERICAL STAFF.

1	Chief Clerk.
1	First Class Clerk.
2	Second Class Clerks.
7	Third Class Clerks.
2	Fourth Class Clerks.
6	Temporary Clerks.
3	Messengers.

DISPENSING STAFF.

2	Chief Dispensers.
6	First Class Dispensers.
10	Second Class Dispensers.
15	Third Class Dispensers.
17	Dispensers-in-Training.
1	Laboratory Attendant.

AFRICAN NURSING STAFF.

2	First Class Nurses.
4	Second Class Nurses.
10	Third Class Nurses.
48	Nurses-in-Training.
13	Hospital Assistants.

1	Dental Mechanical Assistant.
---	------------------------------

LUNATIC ASYLUM STAFF.

- 1 Chief Attendant.
- 1 Assistant Chief Attendant.
- 10 Attendants.
- 1 Matron.
- 1 Gatekeeper.

MEMBERS OF SUBORDINATE STAFF OF THE SANITATION BRANCH.

- 1 Chief Clerk.
- 1 First Class Clerk.
- 4 Third Class Clerks.
- 2 Temporary Clerks.
- 1 Sanitary Inspector and Training Office .
- 1 Messenger.
- 4 First Class Sanitary Inspectors.
- 10 Second Class Sanitary Inspectors.
- 49 Third Class Sanitary Inspectors.
- 2 Female Sanitary Inspectors.
- 1 Disinfector Mechanic.
- 1 Storekeeper.
- 8 Attendants for Contagious Diseases Hospital.
- 11 Vaccinators.
- 1 Third Class Clerk to Deputy Registrar of Deaths.
- 3 Clerks to Deputy Registrar of Deaths.
- 18 Sextons.
- 2 Messengers.

TABLE 2.—FINANCIAL.

(a) STATEMENT OF REVENUE FOR THE YEAR, 1921.

Revenue (Hospital fees) £3,022 17s. 3d.

(b) STATEMENT OF EXPENDITURE FOR THE YEAR, 1921.

Medical Department (including Sanitary Branch)—

Personal Emoluments £100,160 9 6
Other Charges 124,711 4 2

Total £224,871 13 8

II. PUBLIC HEALTH.

(a) GENERAL REMARKS.

3. The following table shews the most noteworthy contrasts in the returns of diseases treated during the years 1919, 1920, and 1921 :—

	1919.	1920.	1921.
Small-pox	23	298	9
Chicken-pox	121	229	226
Dysentery { Amoebic	18	..	..
{ Bacillary	7	..	..
{ Type undiagnosed	433	824	710
Enteric Fever	9	12	41
Influenza	135	885	184
Malaria { Tertian	645	823	904
{ Quartan	42	9	27
{ Aestivo-autumnal	460	676	1,832
{ Chronic	145	140	432
{ Blackwater	20	36	21
{ Unclassified	2,446	3,021	2,730
Measles	14	149	19
Pneumonia	277	422	370
Rheumatic Fever	11	29	18
Sleeping Sickness	14	27	8
Whooping Cough	72	126	118
Alcoholism	25	44	28
Yellow Fever	10	3	4
Tuberculosis	269	355	337
Plague	..	..	..

4. *Dysentery*.—The number of cases are slightly less than last year. There were, however more deaths but not sufficient to give rise to comment.

5. *Malaria*.—A greater number of cases of Malarial Fever attended hospital than last year. The mortality, it will be observed, is very slight.

6. *Blackwater Fever*.—Nineteen cases occurred during the year with nine deaths as compared with thirty-six cases in 1920 with ten deaths. A satisfactory diminution on the number of cases can therefore be recorded, but the mortality has been much greater.

7. *Yellow Fever*.—Sporadic cases of this disease have occurred. Four cases with three deaths being reported as compared with three with one death during 1920.

8. *Tuberculosis*.—Three hundred and thirty-six cases received treatment during the year with forty-one deaths recorded as compared with three hundred and fifty-five cases and thirty-six deaths in 1920.

It must be remembered that the mortality is far greater than the figures show as by far the greater number of cases cease to attend the dispensary after a while and are lost sight of.

9. *Guinea-Worm*.—Eight hundred and eighty-nine cases were seen; seven hundred and ten in the preceding year. Seventy-one cases were treated in Accra as compared with fifty-four in 1920. This is not to be taken to infer that Guinea-Worm is on the increase. The source of infection is most probably not in Accra but elsewhere and the infection possibly took place one year to nine months previously.

10. *Enteric Fever*.—Cases number forty-one as against twelve last year. This is a great increase. The greater number of cases occurred in Accra and in Saltpond. Protective inoculation has been freely taken advantage of. It is not easy to trace the source of infection. No indication of an epidemic have been manifest.

(b) EUROPEAN OFFICIALS.

TABLE SHEWING SICK, INVALIDING AND DEATH RATES OF EUROPEAN OFFICIALS.

	1919.	1920.	1921.
Total number of officials resident	563	775	768
Average number resident	522	620	612
Total number on the sick list	396	626	674
Total number of days on the Sick List	3,210	4,983	6,900
Average daily number on Sick List	8.8	13.6	18.9
Percentage of sick to average number resident	1.69	2.19	1.86
Average number of days on the Sick List for each patient	8.10	7.96	10.23
Average sick time to each resident	6.15	8.03	11.27
Total number Invalided	28	30	38
Percentage of invalidings to total residents	4.29	3.87	4.94
Percentage of invalidings to average number resident	5.36	4.83	6.20
Total Deaths	6	7	14
Percentage of Deaths to total residents	0.92	0.90	1.82
Percentage of Deaths to average number resident	1.15	1.13	2.28

DAYS ON SICK LIST.

Causes.	1919.	1920.	1921.
Tropical Diseases	1,446	1,923	4,328
Non-tropical Diseases	1,764	3,060	2,572
Totals	3,210	4,983	6,900

11. *Causes of Invaliding of European Officials.*—Malaria (5), Pulmonary Tuberculosis (2), Hæmorrhoids (1), Neurasthenia (6), Debility (5), Melancholia (4), Heat Exhaustion (1), Chronic Eczema (1), Neuritis (1), Adenitis (1), Injury to eye (1), Acute Hepatitis (1), Gastric Catarrh (1), Empyema of Antrum (1), Blackwater Fever (1), Injury (1), Tachycardia (1), Insomnia (2), Hallux Valgus (1), Prostatitis (1); Total 38.

The following table shews, in periods, the approximate length of tour of those invalided :—

8 months and under	..	..	19
9—16	„	..	19
17—21	„	..	Nil.

Of the thirty-eight cases invalided four were military and thirty-four were civilians.

The invaliding rate 49.47 per 1,000 shews a slight increase on the previous two years.

	1919.	1920.	1921.
Invaliding Rate (per 1,000)	42.9	38.71	49.47

12. *Causes of Deaths of European Officials.*—Nephritis (1), Exhaustion, Pulmonary Tuberculosis (1), Haemorrhage due to rupture of spleen result of accident (1), Lobar Pneumonia (1), Uraemia following sub-acute Nephritis (1), Syncope (1), Typhoid Fever (1), Blackwater Fever (4), Heart Failure (1), Malignant Malaria (1), Rupture of Heart (1); Total 14.

(c) AFRICAN OFFICIALS.

TABLE SHEWING SICK, INVALIDING AND DEATH RATES OF AFRICAN OFFICIALS.

	1919.	1920.	1921.
Total number of Officials resident	2,122	2,473	2,347
Average number resident	1,739	1,855	1,761
Total number on the Sick List	488	768	681
Total number of days on the Sick List	4,072	7,688	7,217
Average daily number on the Sick List	12	21	19
Percentage of sick to average number resident	0.69	1.13	2.8
Average number of days on the Sick List for each patient	8.95	10.01	10.59
Average sick time to each resident	2.51	4.14	4.09
Total number invalided	18	6	9
Percentage of invalidings to total residents	0.85	0.24	.38
Percentage of invalidings to average number resident	1.04	0.32	.51
Total Deaths	10	8	8
Percentage of deaths to total residents	0.47	0.32	.34
Percentage of deaths to average number resident	0.58	0.43	.45

13. *Causes of invaliding of African Officials.*—Myocardial weakness (1), Myopia (1), Atheroma of Arteries (1), Low Fever (1), Pulmonary Tuberculosis (1), Apoplexy (1), Anaemia (1), Chronic Neuritis (1), Dysentery (1); total 9.

14. *Causes of Deaths of African Officials.*—Pneumonia (4), Aneurism of Aorta (1), Hepatic Abscess (1), Pulmonary Tuberculosis (2); total 8.

(d) GENERAL EUROPEAN POPULATION.

(i) Government Officials	..	..	..	..	..	..	768
(ii) Employés of Trading Firms	..	..	..	..	..	..	1,556
(iii) Employés of Mining Companies	..	..	..	..	..	..	541
(iv) Missionaries	..	..	..	..	..	..	74
Total	..	..	..	..	..	..	2,939

Estimated European Population Census April, 1921	..	..	1,903
Arrivals	..	..	1,939
Departures	..	..	1,649
Births	..	..	Nil.
Increase	..	..	290
Daily average population for 1921	..	..	2153.52

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES OF
EUROPEAN NON-OFFICIALS.

Now employed.	Number.	Deaths.	Invalided.	Death rate per cent.	Invaliding rate per cent.
1919.					
Merchants	1,902	15	20	0.79	1.05
Mining Companies	561	7	25	1.24	4.45
Missionaries	66	—	1	—	1.51
Totals	2,529	22	46	0.87	1.82
1920.					
Merchants	1,506	20	47	1.35	3.17
Mining Companies	465	4	19	0.86	4.08
Missionaries	72	1	—	1.38	—
Totals	2,043	25	66	1.22	3.23
1921.					
Merchants	1,556	15	41	.96	2.63
Mining Companies	541	2	10	.36	1.84
Missionaries	74	1	2	1.35	2.70
Totals	2,171	18	53	.82	2.44

15. *Causes of Invaliding of European Non-officials.*—Septic Poisoning (1), General Debility (10), Malaria (4), Locomotor Ataxy (3), Carcinoma of Liver (1), Ischio Rectal Abscess (1), Intestinal Obstruction (1), Inguinal Hernia (1), Remittent Fever (1), Gastritis (1), Blackwater Fever (1), Jaundice (1), Yellow Fever (1), Varicose Ulcer (1), Pulmonary Phthisis (3), Neurasthenia (5), Chronic Colitis (2), Alcoholism (2), Anaemia (1), Mitral Stenosis Rheumatism (1), Typhoid Fever (3), Pleurisy (1), Morbus Cordis (1), Appendicitis (1), Iliac Abscess (1), Gonorrhoeal Rheumatism (1), Periph Neuritis (1), Lymphangitis (1), Fracture of Leg (1); total 53.

16. *Causes of Deaths of European Non-officials.*—Blackwater Fever (5), Accidents (3), Malaria (2), Heat Pyrexia and Syncope (1), Pneumonia (1), Yellow Fever (3), Hyperpyrexia (1), Septic Peritonitis (1), Appendicitis (1); total 18.

EUROPEAN MORTALITY AND INVALIDING RATES, 1921.

Total Strength.	Number.	Deaths.	Invalidings.	Death Rate per 1,000.	Invaliding Rate per 1,000.
Official	768	14	38	18.22	49.47
Non-official	2,171	18	53	8.23	24.41
Totals	2,939	32	91	10.88	30.96

ANNUAL MEDICAL AND SANITARY REPORT, 1921.

III. SANITATION.

A.—GENERAL REVIEW OF WORK DONE, LAWS
PASSED AND PROGRESS MADE.

(i) ADMINISTRATIVE.

The Sanitary organisation has been satisfactorily maintained and has been perhaps less disturbed than in some recent years. No serious epidemics have occurred and the conditions of labour have been on the whole more nearly normal.

The available European Staff was as follows :—

The Senior Sanitary Officer and one Junior Sanitary Officer were in the Colony throughout the year. One Junior Sanitary Officer had to act as Medical Officer of Health, Accra, from 1st January to 28th July and the other, after returning from leave, was in a similar capacity at Coomassie from 11th July to the end of the year.

This necessity has interfered with regular tours of inspection, but visits have been made as occasion arose or when work at headquarters permitted absence of Senior Sanitary Officer or Junior Sanitary Officer.

Medical Officers of Health (or a Junior Sanitary Officer as substitute) were stationed at Accra, Seccondee, Cape Coast and Coomassie throughout the year. One vacancy for Medical Officer of Health was filled by a new appointment from 23rd August since which date the establishment of Medical Officers of Health has been at full strength, viz., six, for the first time since the year, 1915.

Superintending Sanitary Inspectors (European) were available throughout the year for Accra, Seccondee, and Coomassie but not for Cape Coast. One resignation has been replaced by one new appointment. The death of Mr. Hutton, Senior Superintending Sanitary Inspector, in November, deprived the Department of an experienced and capable officer; the vacancy will not be filled. The native staff has thus had a satisfactory share of skilled supervision in the larger stations, and their work has throughout been performed with a fair amount of credit to themselves and to the Department.

The following places have been visited :—In the Eastern Province—Kibbi, Koforidua and district, Nsawam, Akuse and district, and the Railway extension from Tafo towards Coomassie. In the Central Province—Cape Coast, Saltpond and Winnebah. In the Western Province—Seccondee, Tarquah, and labourer camps on Railway deviations. In Ashanti—Coomassie and the proposed source of water-supply at Mampong; also the Railway extension from Coomassie to the Eastern Province boundary at Kwahu Prashu.

ORDINANCES, ETC.

No new Ordinance directly affecting Public Health has come into force, but by the Provincial Commissioners (Vesting of Powers) Ordinance, 1921, the powers of the Governor under "The Towns Ordinance," "The Infectious Diseases Ordinance," and "The Births, Deaths, and Burials, Ordinance," were conferred on Provincial Commissioners.

Under "The Infectious Diseases Ordinance" a set of rules "The Infectious Diseases Regulations, 1921," were made (Regulation No. 12 of 1921) and for Ashanti rules were made for reporting Small-pox, Anthrax, Plague and Cerebro-spinal Fever (Regulation No. 2 of 1921).

"Enteric Fever" has been added to the list of Infectious Diseases under the same Ordinance (Order in Council No. 18 of 1921) and was also made compulsorily notifiable by medical practitioners (Regulation No. 28 of 1921).

"The Vaccination Ordinance, 1919" has been applied to the following five places in Ashanti—Wereso, Odumase, Konongo, Juaso, and Atindie (Order by the Governor, No. 8 of 1921).

Under "The Northern Territories Administration Ordinance, 1902," a new set of Rules "The Northern Territories Regulation of Towns and Villages Rules, 1921" was made (Rule No. 2 of 1921).

The Rules made with respect to the Regulation of Towns, Villages, Streets, and Markets in Ashanti, under the Ashanti Administration Ordinance, 1902, were applied to Effiduasia in Ashanti (Order No. 1 of 1921), and to Kete Kratchi in Togoland (Proclamation No. 21 of 1921).

The provisions of "The Towns Ordinance" were suspended in the towns of Asuoya and New Asuoya in Akwapim District (Order in Council No. 7 of 1921).

Under "The Diseases of Animals Ordinance" the town and cantonments of Tamale in the Northern Territories were declared infected by reason of Cattle Plague (Order by the Governor, No. 6 of 1921, of 2nd November—revoked by No. 7 of 1921, of 7th December).

Various Orders in Council and Orders by the Governor under "The Quarantine Ordinance, 1915," and "The Infectious Diseases Ordinance, 1908" have been made from time to time declaring certain places to be infected by reason of Infectious Disease, or revoking the same.

Thus Winnebah was declared infected by reason of Yellow Fever.

Bathurst in Gambia, Monrovia and other ports in Liberia were declared infected by reason of Small-pox.

Dakar was declared infected by reason of Plague.

(ii) PREVENTIVE MEASURES AGAINST:—

(1) INSECT-BORNE DISEASES.

(a) *Malaria, Yellow Fever, etc.*—Reduction of mosquitoes and destruction of their breeding places has been vigorously carried out along the usual lines forming at all times one of the chief activities of the sanitary staff of Inspectors and labourers. Much labour spent on oiling and on repeated clearing of ditches and water-logged areas in many stations will eventually be saved when properly constructed drains can be made.

Blood smears from 574 children of ages about five to 10 years taken in the period June to September in 12 schools in the Eastern Province (including Christiansborg and Labadi) showed on a single examination a proportion of 42.16% infected with malarial parasites. Of these only 21 showed the presence of *gametes* (*Malignant Tertian*—six, *Benign Tertian*—five, *Quartan*—10) the form of the parasite capable of infecting mosquitoes, a small proportion considering the time of year.

A certain amount of quinine distribution has been done in some of these schools, but the conditions do not at present amount to a regulated experiment from which deductions may be drawn as to the value of this measure.

Neglect of the rule that native children shall not be allowed on a residential area for Europeans seems to increase in spite of the efforts of Medical Officers of Health. In August 12 native children were found living in premises occupied by Europeans in the Accra "Segregation Area."

In stations where there is a Medical Officer of Health the names and addresses of patients suffering from Malaria are reported by the Senior Medical Officer or Medical Officer so that investigation of the source and special local anti-mosquito measures may be undertaken according to circumstances.

An attempt to bring small fish from Secondee to stock the Accra lagoon as an anti-mosquito measure has for the present proved unsuccessful as the varieties tried failed to survive the period necessary for the journey.

In Accra steps have been taken to remove all banana trees from the European Residential Area. A large part of the open space on this area has been kept cleared and cultivated by convicts thus reducing harbourage for insect pests.

In Coomassie the incidence of Anopheline mosquitoes on the Residential Ridge has been greatly reduced by drainage and cultivation (as a Prison farm) of the West Subin valley.

As regards prosecutions for harbouring mosquito larvae the fact that very few cases are discharged and that conviction is the rule indicates a commendable attitude on the part of Local Courts in assisting the Sanitary Authority.

Yellow Fever.—Two fatal cases in Europeans occurred in Winnebah, one in January and one in March. In the case of the former another native case having been diagnosed (later proved negative) the port was declared infected. The action taken was to transfer the patient to a mosquito-proof room and close the bungalow which he had occupied. Fumigation of the infected bungalow and of all occupied premises in its vicinity was carried out, and opportunity taken to apply the same process to some 30 other houses in the town. The Clayton machine was in use for this purpose.

In the second case a prohibited area was declared and arrangements made to remove all European residents temporarily to other quarters until thorough fumigation of all houses, stores, etc. in the area were dealt with. Systematic search for destruction of mosquito-breeding places was carried out and some prosecutions instituted.

The absence of a dependable water-supply at Winnebah, and the high cost of water during the dry months (up to 3/- being paid for a kerosene tin of water) are factors which greatly favour a high incidence of mosquito-breeding in domestic receptacles stored in out of the way places and concealed in rooms.

In Accra one fatal case occurred in a European in January and one in a native who arrived moribund from Koforidua.

Trypanosomiasis.—Permanent gangs for clearing overgrowth likely to harbour tsetse-flies and their haunts near towns and water-fords, etc., are maintained. No evidence of prevalence or increase has come to notice.

(2) INFECTIOUS AND EPIDEMIC DISEASES.

The following diseases are reported by mail monthly for information of the Secretary of State and transmission to the Ministry of Health :—Plague, Cholera, Yellow Fever, Small-pox, Typhus, Relapsing Fever, Dysentery, Cerebro-spinal Fever, Acute Poliomyelitis, Influenza, Pneumonia.

Reports of Yellow Fever, Plague and Small-pox are rendered by telegraph.

No case of Cholera, Typhus or Relapsing Fever has been recorded.

Enteric Fever.—Has now been added to the list of Infectious Diseases under the Ordinance and is also included amongst those which are compulsorily notifiable by medical practitioners to the Health Officer. It is believed that apart from the power given to deal with contacts and carriers this action will be an impulse to careful diagnosis and will lead to accumulation of information as to its real prevalence which may in time help to clear up some of the “ undiagnosed fevers.”

Twelve cases were admitted to the European Hospital in Accra during the year. One died and another death occurred—a Lagosian girl resident in Nsawam—the diagnosis being made by an autopsy performed in Accra. Several of the cases appear to have acquired infection elsewhere and the following summary is furnished by the Medical Officer of Health.

Number of Europeans suffering from Enteric treated in the European Hospital	12
No. of Europeans probably infected at Akuse	6
No. „ „ „ „ „ „ Accra	5
No. „ „ „ „ „ „ Koforidua	1
No. of deaths among European Enteric patients	1
No. of Africans found suffering from Enteric	2
No. of Africans probably infected at Accra	1
No. of cases of infection with <i>B. Typhosus</i>	5
No. of cases of infection with <i>B. Paratyphosus b.</i>	3
No. of cases of unclassified infections with Enteric group	4
No. of Europeans inoculated with anti-typhoid vaccine in Accra	70
No. of Africans (dressers) inoculated with anti-typhoid vaccine in Accra	8

The sources of infection in the Accra cases remain doubtful. One was probably infected from his wife who appeared to be a “carrier.”

The incidence of some of the cases suggested more or less direct infection from one to another.

Flies were not particularly prevalent. The pipe-borne water-supply during the second half of the year gave results on routine bacteriological examination which were below the standard reached in the periods immediately preceding, but investigation has led to no discovery of conditions likely to account for the cases of Enteric.

There is a general belief that this disease is more prevalent in the larger coast towns than the official returns would indicate, and if this is so it is probable that carriers amongst personal servants and employees are proportionately more numerous than previously suspected. The post-war influx of Europeans to this country, many of whom may have suffered from Enteric Fever, also favours a condition in which unsuspected human carriers may be responsible for increasing the opportunities for spread.

The preventive measures taken are outlined as follows by the Medical Officer of Health, Accra:—

- (1) Adding Enteric to the list of diseases compulsorily notifiable.
- (2) Removal of patients to hospital where special precautions were taken with regard to utensils used, disinfection of excreta, etc.
- (3) Disinfection of infected quarters.
- (4) Observation and protection of contacts by inoculation with anti-typhoid vaccine.
- (5) Examination of contacts with patients by Dreyer's modification of Widal's Test—prior to inoculation being performed—with a view to discovering “carriers.”
- (6) Investigation of water and food consumed by patient previous to admission to hospital.
- (7) Bacteriological examinations of general water supply.
- (8) Anti-fly measures,—including the sending of graphic posters on flies and their disease—bearing preclivities to all the Schools in Accra.
- (9) Lectures to the Sanitary Staff on the recognition and prevention of the disease.
- (10) Circularization of all European residents in Accra pointing out how the disease was acquired, what preventive measures to take and offering free inoculation with anti-typhoid vaccine.
- (11) Circularization of patients on their discharge from hospital giving instructions regarding special precautions to be taken by them for at least six weeks subsequent to their discharge from hospital.
- (12) Bacteriological examination of patients after their discharge to eliminate the possibility of “carriers.”

It is also proposed to apply Chlorination to the Accra filtered and lime-treated water-supply, and protection by inoculation with anti-typhoid vaccine of all newly-appointed officials and those returning to the Colony is recommended.

A non-fatal case (with a laboratory diagnosis of *B. typhosus*) occurred in a boarding-school girl in Cape Coast, and another case from Elmina was treated in the former town. Instances arise not infrequently in other coast towns where the Medical Officer has suspected, on clinical grounds, certain cases of fever to be probably Enteric.

In Saltpond seven cases were treated during the year.

The bacteriological investigation of intestinal diseases in this country is one which might prove of surpassing importance, and the increased knowledge which would necessarily accrue might conceivably indicate that other pathogenic organisms are concerned in the production of typhoid-like disease. Farther if this were proved the composition of a prophylactic enteric vaccine suited for West Africa would require consideration.

Diarrhoea and Dysentery.—Inspection of meat and foodstuffs and protection of these from flies are amongst the general measures of prevention, along with the protection of water supplies, closure of polluted wells, and careful sewage and refuse disposal.

The majority of cases of Dysentery, so far as can be judged from those in which a laboratory diagnosis is secured, are amoebic. Cases of Dysentery, although not an Infectious Disease under the Ordinance, are reported to the Senior Sanitary Officer (for information of the Secretary of State), and the Medical Officers of Health are enabled to act promptly in investigating possible causes of any increased local incidence.

Chicken-pox.—Cases occurred in the prison in Accra and Tamale. No extension to the town from these sources occurred. In Coomassie 69 mild cases from both town and prison were isolated and the opportunity was taken to vaccinate from house to house to ensure detection of possible cases of *Small-pox*.

Small-pox.—No cases of Small-pox occurred in Accra during the year although it occurred in districts with frequent means of communication. Several cases were isolated on suspicion and the present immunity is no doubt referable to the extensive vaccination campaign accompanying and following the epidemic of 1920.

A somewhat lingering outbreak started in Kibbi in April, and affected some of the cocoa areas where the conditions were easy for spread from one small village to another through mild or concealed cases. No large town was infected and the comparatively large body of labourers in the Akim Gold Fields and the Bonsu Plantation also escaped. Active measures were taken to isolate and collect the infected into a camp under European supervision, while the epidemic was the means of stimulating an extensive vaccination campaign throughout that portion of the Eastern Province.

The number of cases is not known with accuracy, but 70 were isolated with 12 deaths, and the outbreak eventually came to an end in October.

Four cases occurred in a single family in a hamlet near Cape Coast, and isolation with vaccination was successful in preventing spread.

In Winnebah District *Small-pox* had been occurring since November, 1920, and some of the Agona towns were not free until April, 1921. In Winnebah itself two cases occurred in February, but many of the cases reported from villages proved to be Chicken-pox.

Another small outbreak occurred in October. The disease was of a mild type, but the scare was sufficient to stimulate vaccination over a wide area.

A single case was reported from Wa in the Northern Territories, and steps were taken to vaccinate all carriers arriving in Ashanti from that district.

Ports in other Colonies which were declared infected by reason of Small-pox under the Quarantine Ordinance, were :—

Bathurst between May and September, with a later smaller outbreak in November, without the necessity of declaration.

Monrovia which was already in quarantine at the beginning of the year and became free in February, was again declared infected in March until June, while Grand Bassam and Cape Palmas continued infected until August.

Passengers and crews arriving at Gold Coast ports from these places were subjected to medical inspection and vaccination when required, and no instance of introduction of the disease by this channel is known.

All immigrant labourers from Liberia are examined and vaccinated if necessary while their quarters in our towns are subjected to close inspection at all times.

Vaccination.—The number of vaccinators on the staff was 13 as compared with nine in 1920, and most of the Sanitary Inspectors are capable of performing the same duties.

The number of tubes of lanolinated lymph received during the year was 21,207 besides 78 tubes of dried lymph for use in the Northern Territories.

There was a considerable increase of vaccination effort and districts not previously dealt with have had the services of a vaccinator either throughout the year or for a period of a few months. The outbreaks of *Small-pox* in scattered areas led to a more widespread campaign and although in these instances the number of vaccinations performed is not accurately known, and the number successful cannot be verified, there is no doubt that many districts in the Colony are at the moment in a better vaccinal state than has been the case for some years past.

Government and Assisted Schools offer good opportunities which have been utilised for extending this protective measure, and in towns where Vital Statistics are recorded an effort is made by following up the registered births to secure the vaccination of infants within six months of birth.

Large bodies of labourers from the Northern Territories drafted for mines and railway works are vaccinated at Coomassie.

The total number of vaccinations according to the returns received was 87,449 of which 58,073 were verified as successful.

A table for comparison with previous years is given below, the figure for 1920 being abnormally high owing to the exigencies of the *Small-pox* epidemic.

VACCINATIONS—1914 to 1921.

	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.
Total vaccinations ..	7,631	9,723	10,313	21,293	14,700	21,467	221,386	87,449
Total verified successful ..	5,417	7,270	7,848	15,619	10,726	16,943	177,085	58,073
Percentage verified successful ..	71	74.7	76	77.3	73	78.9	80	66.4

The percentage of those verified as successful ranged from 30% recorded at Ho in Togoland to 86% in Accra. The latter figure is calculated by the Medical Officer of Health, Accra, on the results of observations on controls such as police recruits, school children and immigrant Kroos to the effect that about 90% of all vaccinations classed as "Unseen" might be deemed successful.

Plague.—The latest record of *Plague* in Accra is that of a single case in July, 1919.

In September, 1921, at Wa in the Northern Territories, a fatal case was diagnosed clinically as Bubonic *Plague* with apparent corroboration by fresh stained smears of gland juice. This, however, was eventually not confirmed by the Pathologist at Accra who examined smears of blood and gland juice. Nevertheless energetic action had been taken on the provisional diagnosis, as follows:—

- (1) The entrance to the infected compound was walled up and the various huts dealt with by fire, fluid disinfectants, blocking of rat-holes, etc.
- (2) A police cordon was placed around the town.
- (3) The Medical Officers at Sunyani and Kintampo took measures to close temporarily trade roads and ferries.
- (4) The Chief Commissioner, Ashanti, circularised the Chiefs to report sudden deaths, unusual sickness, etc., and to provide materials for isolation camps if required.
- (5) District Commissioners were asked to stimulate an interest in rat campaigns and to offer rewards.
- (6) Traps, disinfectants and fumigants were despatched to Wa as early as possible;

Dakar in Senegal was declared under the Quarantine Ordinance infected by reason of Plague in July, and remained so until 14th September. All ships arriving from that port at Gold Coast ports were boarded, passengers and crew were subjected to Medical examination, and inspection of kitchens, food stores and holds made for evidence of rat mortality. In the towns special attention was paid during this period to measures against rats by poisons, rat-catchers, stopping holes, etc.

Cerebro-spinal Fever.—No particular incidence of this disease has been apparent during the year, but sporadic cases have been reported, *e.g.* one in Tamale in April and one in Accra in June. Apart from these there was a restricted outbreak of a few cases in the north east part of the Northern Territories in the early part of the year and a more scattered one in the north west part. The number of cases and extent of the latter could not be ascertained as many reports from native Chiefs, etc., proved groundless when investigated. In the Lorha and Tumu districts the District Commissioner estimated the deaths at about 89. The Medical Officer, Wa, visited and took such police and other measures as possible to prevent spread, but his report refers to the futility of action in the presence of the apathy of the Chiefs and people themselves, in the following terms :—

“ No attempt whatever seems to have been made by the Chief and people to check the disease in spite of the severe lesson they had last year and I do not believe that, short of strictly policing infected villages, or the actual presence of an official in the village any attempt will ever be made by the people themselves or that any restrictions which may be put upon them with a view to checking of the disease are likely, short of the close supervision, to be carried out.”

Influenza.—An epidemic occurred in Accra in June and July lasting about four or five weeks, during which 95 cases were notified including four Europeans and 76 Krooboys. No cases were notified by private medical practitioners.

Pneumonia and Broncho-pneumonia were common complications and there were 11 deaths due to Pneumonia. Numerous cases of influenza-like colds in Europeans occurred in the succeeding months and a supply of prophylactic vaccine was obtained.

Preventive action included isolation of patients, disinfection and white-washing, closure of schools, warning notices to employers of labour, etc.

A mild form of *Influenza* was epidemic in Secondee early in June shortly before its appearance in Accra. The actual number of cases is unknown, but 34 were definitely diagnosed and notified as such by the Medical Officers and there were two deaths. The Medical Officer of Health estimated that for every case notified there were probably not less than four not notified. Besides isolation, disinfection, etc., other measures of prevention were restriction of native passenger traffic by coasting vessels unless previously examined, circular letters to employers of labour to ensure prompt diagnosis and treatment, prohibition of public meetings and funeral customs. Schools were not closed, but a medical inspection of all school children was made.

(3) ENDEMIC DISEASES.

Tuberculosis.—Pulmonary Tuberculosis is one of the Infectious Diseases under the Ordinance, but is not compulsorily notifiable. Government Medical Officers report cases to the Medical Officer of Health in order that measures to prevent spread may be taken if possible, while a judicious use of the power to refuse in certain circumstances a burial permit without a medical certificate has had the effect of bringing to light *Tuberculosis* as a cause of death in some cases which would otherwise have been registered under other headings such as Fever or Bronchitis.

The preventive measures in use include the following :—

- (1) Notification to the Health Officer.
- (2) Isolation of certain cases in an Infectious Diseases Hospital or on the verandah of the general Native Hospital.
- (3) Disinfection and white-washing of premises.
- (4) Issue of leaflets in the vernacular.
- (5) Following up each case with a view to exercising personal influence and discovering others in the early stages.
- (6) Supervision of building construction to ensure improved ventilation and light in dwellings.

A schedule of inquiry and of details of each case is in use for future reference. Treatment of Pulmonary Tuberculosis at Government Hospitals and Dispensaries is free.

In Accra only nine cattle out of 1,993 slaughtered showed signs of tuberculosis, and one pig out of 2,763.

HELMINTHIC DISEASES.

Ankylostomiasis.—In response to a Circular from the Secretary of State, inquiry on the present situation in respect of this disease was made, the result of which is embodied in a short report a copy of which is given here.

ANKYLOSTOMIASIS—PREVENTION OF AND MEASURES AGAINST IN THE GOLD COAST.

Accurate information as to prevalence is lacking and no organised investigation has, so far as I can ascertain, ever been carried out.

2. From a perusal of native hospital returns, however, and of pre-war returns of stool examinations periodically rendered, the impression received is that compared with some other tropical countries the incidence is small. It is probable, however, that in certain districts this parasite will be found to be very prevalent, while in others it is definitely known to be comparatively rare, or at least of insufficient importance to the individual to cause symptoms calling for relief.

3. At present no particular investigations are made, for instance of the incidence amongst new arrivals at the Asylum or at Gaols, but before the war a quarterly return (on Sanitary Form No. 60) was rendered by Medical Officers showing the number of the inmates of Prison or Native Hospital whose stools had been examined and tabulating the results with reference to hookworm and other intestinal parasites. In the years 1911, 1912 and 1913 the following figures were recorded, being the total results from Prisons and Hospitals from the Colony, Ashanti and Northern Territories :—

Year.	No. of cases examined.	No. showing hookworm ova.
1911	861	64 or 7.4 %
1912	1,517	61 „ 4.0 %
1913	1,644	219 „ 13.3 %

The use of Form No. 60 has not yet been resumed.

4. From the annual medical reports from stations it appears (but without adequate figures in support) that *ankylostomiasis* is prevalent in the districts of Axim, Saltpond, Addah and Quittah, whereas in most other areas it is either definitely stated to be uncommon or the number of cases shown as treated during any year is small.

5. The following instances may be given :—

Accra.—Only eight cases treated in 1920, and 12 deaths recorded in the five years 1916 to 1920.

Cape Coast.—Two cases treated in 1917, two in 1918, and one in 1920. No systematic search is on record, but the general physical conditions here seem to be unfavourable to the spread of *ankylostomiasis*.

Seccondee.—In the years 1916 to 1920 only seven cases treated, but no routine examination of large numbers is made.

Coomassie.—In 1920 only six cases out of 9,000 out-patients.

Kofofidua.—No cases in 1920.

Saltpond.—Twenty cases verified by microscope in 1920, and stated by the Medical Officer to be “notoriously prevalent.”

6. The total annual number of cases coming under treatment in all the Hospitals of the Colony Ashanti and the Northern Territories in the years 1910–1919 has varied from 1 in 1911 to 148 in 1919, and the number of deaths recorded annually from this cause in the same period varied from none in 1910 to six in 1919.

7. As regards methods of treatment nothing new or of special interest has to be recorded, and the same may be said of measures of control.

8. The proper disposal of excreta by the methods available in each different station, is a matter which receives the most careful attention from every Medical Officer, and their reports indicate that the question of *ankylostomiasis* no less than that of fly-borne intestinal diseases is fully considered in this relation along with the protection of under-ground sources of water.

9. In all large towns and in many smaller ones the pan latrine system is adopted, and public latrines, with concrete floors which can be and are regularly disinfected, are supplied. A latrine inspector is always detailed for supervision of cleanliness, removal and disposal.

10. In Seccondee and Coomassie a certain number of pit latrines in addition are still in use, and as stated above both these towns show a satisfactory immunity, the few cases treated being probably strangers.

11. Ultimate disposal is in the sea at coast towns and by entrenchment elsewhere.

12. Where pit latrines are in use it is preferred to adopt the type known as the *salga* of the Hausas, which in principle is narrow at the mouth (whether a single circular opening or a trench) and wide below, and in porous soil the deeper this can be constructed the better.,

13. Water-carriage systems are in view for the larger coast towns, and at Accra the existing public latrines are convertible for that purpose.

14. Prosecution for promiscuous defaecation or improper disposal of the contents of domestic utensils is carried out rigorously enough in towns where there is sanitary control and this doubtless has an educative effort. Fines imposed are generally from 5/- to 10/-.

15. In villages the native habit varies greatly according to locality, and in the Cape Coast and Seccondee areas the people on the whole use some form of pit latrine, whereas at the western and eastern ends of the coast line, as in the Appollonian villages and the Quittah district respectively, promiscuous use of the sandy surface seems to be the universal custom. In the case of the former the Medical Officer, Axim, demonstrated in 1917 that 80 % of the people were infected. Efforts made to insist on the use of latrines were partially effective, but to what extent this has brought about a reduction of incidence cannot at present be stated.

16. A rise in the general standard of education with the increasing use of foot-wear can be expected to effect a progressive improvement.

Tapeworm is a common parasite. As regards *Taenia solium* its larval form *Cysticercus cellulosae* was found in 595 carcasses of swine out of a total of 2,763 slaughtered in Accra, or 21.5%. In some districts, on the other hand, the incidence in pigs is almost nil. *Taenia saginata*, derived from beef, is rarer in Accra where *Cysticercus bovis* was found in 120 out of 1,993 carcasses of oxen or 6%. It is much the commoner form amongst the northern races whose habit it is to consume half-cooked meat, and is the only form found amongst strict Mohammedans.

Careful meat inspection at the slaughter-house and on the market stall, and the prohibition of slaughter elsewhere than in the appointed place are chiefly relied upon to prevent Taeniasis.

Bilharzia.—The real distribution of this parasite in Gold Coast is not known, but it is probably rare in the forested areas and more common than hitherto suspected in the open coastal districts and the north. In Accra the ova were found in five out of eight suspected urines, but there is no indication that infection occurred locally, and the particular species of water-snail which act as its intermediate host have not so far been identified in this neighbourhood. In Winnebah eight cases were verified by the microscope and the Medical Officer considered the danger of infection in local waters sufficiently serious to recommend the boiling of even bathing water. Encouragement of the domestic duck in towns and villages where this parasite occurs seems the simplest preventive measure as the fresh-water snail is probably an important article in its diet.

Guinea-worm is reported from many stations, but its true endemic distribution is not fully known as many cases occur in persons who have acquired the parasite in the Northern Territories many months before its appearance at the surface of the patient's body. Protection of wells, treatment of cases so as to prevent water pollution, and injunctions to strain or boil drinking water in order to eliminate the intermediate host, the water-flea Cyclops, are the preventive measures.

ANIMAL DISEASES.

Anthrax is commonly prevalent amongst cattle in various places in the north.

An outbreak of what appears to have been Malignant Pustule, one of the varieties of Human Anthrax, was reported from Yendi in the north of Togoland coincidently with an epidemic causing 56 deaths amongst cattle. The number of deaths or of cases is not known, but some patients and contacts were isolated, the people were warned against eating meat from diseased cattle or those which have died during an epidemic of any kind, and steps taken to reduce the chances of contact between infected cattle and people, *e.g.*, by deviation of cattle routes and appointment of special watering-places, etc.

Cases which appear to be of this nature have during previous years been reported under such native names as Nanto and Bompoggo, and there is still considerable doubt as to whether these names cover other diseases with symptoms which raise uncertainty even in the minds of trained observers.

(iii) GENERAL MEASURES.

Owing to the increase of the European population, the problem of housing has become acute.

The principle of segregation, with particular exclusion of native children, is maintained as far as possible, but a scarcity of bungalows renders it often necessary to place some Government officials in non-segregated quarters.

There is also a tendency to overcrowd the bungalows, the system of "doubling up" being much in evidence generally to the detriment of health and comfort. The European mercantile community are slow in taking advantage of the plots offered them in the Residential areas, and except in the case of a few of the leading firms most non-official Europeans reside in the Native towns.

Dhub grass was planted successfully over a large area in Accra. At Cape Coast most of the grass planted was carried away by heavy and unexpected rains.

A shed for medical inspection, vaccination, etc., of passengers during epidemic times and of alien immigrants at all times, has been erected at the harbour in Accra.

Routine Work.—Although the Sanitary routine work of the Colony has been well maintained a shortage of staff has prevented the carrying out of anti-mosquito measures over a still larger area and has restricted extension to new stations.

The larval index was below 1% in over 370,000 houses inspected throughout the Colony. The highest index was at Elmina, 7.12%, but this is a station with no residential Medical Officer or Health Officer. A satisfactory index was shown for the three largest towns, Accra, Secondee and Coomassie.

The total number of prosecutions for mosquito larvae (2,679) and for other nuisances (5,598) amounted to 8,277 of which 8,148 were convicted, the fines amounting to £4,882. 29 cases were cautioned or dismissed.

Sanitary Improvements.—Sanitary conveniences such as latrines, dustbins, wash-houses, wells, etc., were constructed at various towns.

The water carriage latrine at Falcon Hill—Accra—is still unfinished owing to delay in delivery of Sanitary fittings.

Drainage.—The 2,811 yards of concrete drains constructed at Accra include the extension of the Main Drain to the low level of the Korle Lagoon, and the necessary improvements of the drainage of the streets at Christiansborg. Channels were also constructed to connect the Korle Lagoon with the sea.

672 yards of drain were constructed at Cape Coast, 500 at Secondee and 1,177 at Coomassie.

All these drains require constant attention, in order to be kept in a sanitary condition, as they are apt to be misused by the people who do not appear to understand their purpose.

Sewage Disposal.—The system of sewage disposal remains the same. Pits and trenches are used at Secondee and at all inland towns, while the Coast towns make use of the sea into which all refuse is dumped. At Accra the tipping depot has worked very satisfactorily.

A system of water carriage was introduced by the Cable Company at Accra, where the crude sewage is carried out into deep water by means of pipes. This new departure has given satisfactory results.

Water Supply.—At Accra the system of water purification by excess lime followed by sand filtration, has given less satisfactory results than previously. During the last half of the year *B. coli* was found in various samples of water collected from different final filters. Repeated efforts to trace the source of pollution proved unavailing, and a suggestion for the adoption of the chlorination process has been brought forward. This process has given good results at Seccondee. The need for a pipe-borne water supply continues to be felt in the larger towns where population and trade are increasing. Schemes for Coomassie and Winnebah are under consideration, and it is expected that the latter town may soon be in a fair way to enjoy the advantages of pipe-borne water. In Coomassie an immediate increase by digging two new wells is in progress.

Town Planning.—Some progress has been made at Cape Coast in the laying out of the new village of Amanful, which will relieve the congestion of the town area.

Lay-outs of the new towns along the Accra-Coomassie railway are being prepared.

In the larger towns 654 building permits were granted during the year, 237 being issued at Coomassie and 222 at Accra. Trade depression and high priced labour and materials have had the effect of restricting progress in building during the year.

In Accra 213 notices for unauthorised buildings and 37 for dangerous buildings were served.

Food Supply.—The work of inspecting cattle and carcasses was carried out daily in the larger towns of the Colony.

At Accra a long-felt need for protected vehicles for the conveyance of meat from slaughter house to market has been partly filled by the provision of two covered hand carts for this purpose.

Imported articles of food are inspected in stores, markets, auction marts and warehouses, and certificates of condemnation given, followed by destruction when found unfit for human consumption.

No cases of food poisoning have come to notice, but an outbreak of what appears to have been of the nature of Deficiency Disease with symptoms resembling those of Epidemic Dropsy occurred amongst convicts in Tarquah prison. Thirteen were affected with general oedema gastro-intestinal disturbance, great anaemia and weak action of the heart, but without any signs of neuritis, albuminuria, fever or ankylostomiasis. All the cases occurred amongst a batch of prisoners from Coomassie and five died, and post-mortem examination revealed no organic disease apart from oedema. It is presumed that change from their accustomed diet was the cause and symptoms disappeared with altered rations.

Public Health Ordinance.—The draft of a revised Public Health Ordinance has been prepared and is now under consideration. In view of the changing conditions new Ordinances become necessary to meet fresh situations.

Details as to housing, markets, slaughter-houses, disposal of refuse and excreta, water supplies, etc., are shown in Table IV.

B.—MEASURES TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

The training of probationary Sanitary Inspectors is usually undertaken in Accra, but every Medical Officer of Health takes part in instructing his staff and keeping their knowledge up-to-date.

The work and personal influence of the Sanitary Inspectors is an important factor in the spread of knowledge of the ideas underlying Sanitation, but it is also obvious that prosecution for offences against sanitary laws is likely to remain for long the most educative measure amongst the illiterate population.

In Government and Assisted Schools instruction in Hygiene is done in association with "Hand and Eye" work, and no change of syllabus or text-book or general method of teaching has been adopted during the past year. Such instruction commences in Standard IV and continues up to Standard VII, a fair effort being made to combine practical with theoretic teaching.

In the junior trade schools Hygiene obtains a place amongst the literary subjects to be taught throughout the four years of the course.

The question of preparing a Hand-book on Hygiene is under consideration and a commencement has been made. It is probable that such a guide would at the present time be of more value if prepared for teachers themselves, who, if properly instructed will be in the position of interpreters between those who are carrying on the work of Sanitation and the scholars of different grades who require to have the nature and need of those efforts explained and justified according to their capacity.

It is probably through the rising generation alone that one can hope to raise the general standard of knowledge and to improve the present unhygienic, manners, and habits. A capable sanitary organisation and a vigilant staff can do much to check epidemics and to reduce the incidence of infective disease associated with unclean conditions, but these can only become fully effective when, if ever, the general population is educated in proportion. True prevention is ultimately to be attained by a higher standard of life on the part of the individual quite as much as by the larger measures of Public Health administration.

C.—RECOMMENDATIONS FOR FUTURE WORK.

- 1. Increase of European Staff:—
 - (a) Sanitary Officers to secure regular supervision throughout the Provinces.
 - (b) A Medical Officer of Health for Winnebah and Agona towns.
 - (c) European Sanitary Inspectors for wider distribution and for better training of natives.
- 2. Increase of Native Staff and labour.
- 3. Pipe-borne water supplies for Coomassie, Winnebah, Koforidua, Cape, Coast and Saltpond.
- 4. Water carriage sewage system and drain flushing for large towns.
- 5. Improvement of accommodation and provision of water-supply for infectious Diseases Hospital at Accra.
- 6. Medical inspection sheds at coast ports for examination, vaccination, etc.
- 7. Maternity and Child-welfare work.
- 8. Adequate housing for European Officers.
- 9. Segregation of Kroo labour.

Accra,

27th February, 1922.

J. M. DALZIEL,

Senior Sanitary Officer.

IV. METEOROLOGY.
RAINFALL IN INCHES.

								1918.	1919.	1920.	1921.
Accra	..	..	..	..	..	..	..	32.37	20.44	15.87	34.43
Aburi	..	..	..	..	..	..	..	42.24	34.54	36.40	50.83
Seccondee		..	..	..	..	..	..	34.53	38.25	34.65	40.40
Axim	..	..	..	..	..	..	..	47.64	56.05	66.43	88.13
Tarquah	..	..	..	..	..	..	..	53.80	59.36	68.19	71.05
Coomassie		..	..	..	..	..	..	58.64	37.08	50.98	66.94
Tamale	..	..	..	..	..	..	..	44.45	38.61	36.95	61.77

V. HOSPITALS AND DISPENSARIES.

17. The total cases treated at the various Government Hospitals and Dispensaries during 1921 was fifty-seven thousand four hundred and forty-two.

The following table shews the total number of In-patients treated at Accra, Secondee and Coomassie Hospitals :—

Station	1919.		1920.		1921.	
	Europeans.	Africans.	Europeans.	Africans.	Europeans.	Africans.
Accra	166	594	250	898	283	1,136
Secondee	184	317	233	432	306	676
Coomassie	100	1,305	149	1,362	172	1,125
Total	450	2,216	632	2,692	761	2,937

PRISONS.

18. The general health of the convicts in the Prisons of the Colony was good. No epidemic, disease occurred. A total of four thousand eight hundred and twenty-one convicts were admitted for punishment and there was a daily average of one thousand seven hundred and sixty-three convict prisoners. The daily average on the sick list was 47 per cent. of the whole average strength and there were 42 deaths which makes a percentage of 2.32 of the daily strength.

There were a total of 18 deaths in the Central Prisons at Accra, Secondee and Coomassie. Of these five were deaths in Accra Prison of which two were due to Bronchitis and the others to Splenitis, Septic Pneumonia, and Ascites. There were 10 deaths in Secondee Prison, four were due to Pulmonary Tuberculosis and one each to Chronic Bronchitis, Beri beri, Lobar Pneumonia, Pericarditis, Cirrhosis of Liver and Retro-Pharyngeal Abscess. There were three deaths in Coomassie Prison due to General Debility, Dysentery and Pulmonary Tuberculosis.

There were six executions.

VI. SCIENTIFIC.

19. In Appendix A. will be found the Annual Report of the Medical Research Branch for the year 1921, by Dr. J. W. S. Macfie and Dr. A. Ingram.

20. In Appendix B. will be found a short Note by Dr. D. Duff, Medical Officer, Quittah on the treatment of Guinea-Worm by oral administration of preparation of Antimony.

21. Appendix C.—Report on the work done in the Venereal Clinic for the year 1921, by Dr. C. E. Reindorf.

D. ALEXANDER,

15TH APRIL, 1921.

Director, Medical and Sanitary Services.

TABLE IV.

1.—NAME OF TOWN.

Station.	1920.		1921.	
	Approximate Area.	No. of proclaimed open spaces.	Approximate Area.	No. of proclaimed open spaces.
Accra	4½ sq. miles	27	5 sq. miles	32
Cape Coast	2½ sq. miles	4	2½ sq. miles	4
Seccondee	3 sq. miles	3	3 sq. miles	3
Coomassie	9 sq. miles	..	9 sq. miles	..

2.—POPULATION.

Station.	1920.					1921.				
	Natives.		Europeans.			Natives.		Europeans.		
	Males.	Females.	Males.	Fe-males.	Total.	Males.	Females.	Males.	Fe-males.	Total.
Accra ..	13,340	11,300	346	76	25,062	21,018	17,390	457	72	38,937
Cape Coast	4,858	5,341	46	15	10,260	4,946	5,460	38	15	10,459
Seccondee	8,000	5,000	165	19	13,174	5,878	3,622	189	34	9,723
Coomassie	11,391	9,170	168	11	20,797	10,786	7,344	200	19	18,349

3.—HOUSING.

Station.	1920.				1921.			
	Houses.		Huts.		Houses.		Huts.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Accra	180	3,016	See	Houses	175	2,976	See	Houses
Cape Coast	33	1,366	..	321	30	1,370	..	326
Seccondee	106	1,504	..	..	89	1,536	..	—
Coomassie	48	1,300	..	71	81	1,537	..	71

TABLE IV.—*continued.*

4.—MOSQUITO PROTECTION OF HOUSES.

Station.	1920.				1921.			
	Number of houses wholly protected.	Number of houses with Mosquito-proof room.	Made wholly protected in 1920.	Partially protected in 1920.	Number of houses wholly protected.	Number of houses with Mosquito-proof room.	Made wholly protected in 1921.	Partially protected in 1921.
Accra	..	20	..	..	..	37	..	..
Cape Coast ..	..	..	..	..	..	..	..	..
Seccondee ..	..	22	..	..	..	22	..	..
Coomassie ...	..	12	..	..	..	11	..	..

5. (A).—ERECTION OF NEW BUILDINGS DURING THE YEAR.

Station.	1920.					1921.				
	Public Buildings with full sanction.	Houses with full sanction.	Huts with full sanction.	Houses without sanction.	Huts without sanction.	Public Buildings with full sanction.	Houses with full sanction.	Huts with full sanction.	Houses without sanction.	Huts without sanction.
Accra ..	..	50	..	99	..	..	222	..	213	..
Cape Coast	..	16	..	1	2	2	9	3	10	2
Seccondee	..	62	..	..	..	..	32	..	..	..
Coomassie	..	221	..	..	..	..	241	..	..	..

TABLE IV.—(continued).

5 (B).—ACTION TAKEN.

Station.	1920.				1921.			
	Number of Prosecutions.		Number demolished.		Number of Prosecutions.		Number demolished.	
	Huts.	Houses	Huts.	Houses.	Huts.	Houses.	Huts.	Houses.
Accra	..	..	Houses & Huts 72		..	..	40	9
Cape Coast ..	..	..	..	7	..	..	..	17
Secondee ..	..	..	..	..	..	..	..	..
Coomassie ..	..	..	..	31	..	..	..	..

6.—MARKETS.

Station.	1920.			1921.		
	Number.	Paved and drained.	Unpaved.	Number.	Paved and drained.	Unpaved.
Accra	3	2	1	3	2	1
Cape Coast ..	2	2	..	2	2	..
Secondee ..	2	2	..	2	2	..
Coomassie ..	3	1	2	3	1	2

7.—SLAUGHTER HOUSES.

Station.	1920.			1921.		
	Number.	Paved and drained.	Unpaved.	Number.	Paved and drained.	Unpaved.
Accra	1	1	..	1	1	..
Cape Coast ..	1	1	..	1	1	..
Secondee ..	2	2	..	2	2	..
Coomassie ..	1	1	..	1	1	..

TABLE IV.—(continued)

8.—LATRINES

Station	1920.												1921.											
	Number.				New Ones.				Repaired.				Demolished.											
	Male.		Female.		Male.		Female.		Male.		Female.		Male.		Female.									
	Number.	Seats.	Number.	Seats.	Number.	Seats.	Number.	Seats.	Number.	Seats.	Number.	Seats.	Number.	Seats.	Number.	Seats.								
	Number.	Seats.	Number.	Seats.	Number.	Seats.	Number.	Seats.	Number.	Seats.	Number.	Seats.	Number.	Seats.	Number.	Seats.								
Accra ..	41	453	41	239	3	14	3	13	—	—	—	—	46	473	38	259	5	20	—	—	—	—		
Cape Coast ..	14	140	13	132	2	8	2	8	12	82	11	90	17	140	17	140	3	12	7	56	2	16	1	8
Secondee ..	11	196	11	196	1	12	—	—	—	—	—	—	17	115	12	81	1	8	4	12	3	6	1	6
Coomassie ..	26	227	26	221	—	—	—	—	2	—	2	—	32	271	32	245	2	18	—	—	—	—	—	—

8.—LATRINES (PRIVATE).

1920.														1921.				
Station.	Number.	Pails removed daily.	No. of clean pails substituted for dirty ones.	No. of night-soil men.	Cesspools.	Cesspools cleansed.	New Cesspools.	Cesspools abolished.	Cesspools regularly oiled.	Number.	Pails removed daily.	No. of clean pails substituted for dirty ones.	No. of night-soil men.	Cesspools.	Cesspools cleansed.	New Cesspools.	Cesspools abolished.	Cesspools regularly oiled.
Accra ..	378	580	—	70	—	—	—	—	—	494	650	—	88	—	—	—	—	—
Cape Coast ..	126	777	777	36	6	—	1	4	—	123	730	730	36	6	—	2	2	—
Secondee ..	225	220	220	50	—	—	—	—	—	245	233	430	50	—	—	—	—	—
Coomassie ..	98	446	—	—	—	—	—	—	—	132	403	—	42	—	—	—	—	—

9.—REMOVAL OF REFUSE

(27)

Station.	1920.							1921.				
	Dustbins.	Carts removing street refuse.	Amount of refuse removed daily from streets.	Carts removing refuse from yards and premises.	Amount of refuse from yards and premises.	Men employed.	Dustbins.	Carts removing street refuse.	Amount of refuse removed daily from streets.	Carts removing refuse from yards and premises.	Amount of refuse from yards and premises.	Men employed.
Accra	33	9	94 cart-loads	—	—	40	34	7	93	4	—	34
Cape Coast	39	10	54 cart-loads	—	—	32	39	10	55 cart-loads	—	1 cart load.	31
Secondee	20	2 motor lorries	25 cart-loads	13	—	26	21	2 lorries.	23 lorry loads	—	—	23
Coomassie	17	3	150 head-loads.	1	Unknown.	45	20 incinerators	1	437 head loads	1	17 head loads	82

10.—MODE OF DISPOSAL OF EXCRETA, REFUSE AND OFFAL.

Station.	1920.												1921.																			
	Buried or trenched.				Burnt.				Thrown into sea.				Otherwise dealt with.				Buried or trenched.				Burnt.				Thrown into sea.				Otherwise dealt with.			
	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads Offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.	Pails excreta per day.	Cart-loads refuse per day.	Cart-loads offal per day.					
Accra..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					
Cape Coast ..	—	1	1/15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					
Secondee ..	220	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					
Coomassie ..	446	49	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					

*Filling in old quarries.

†Filling in lagoon swamp.

TABLE IV.—*continued.*

11.—AVERAGE DAILY NUMBER OF CARTLOADS OF CANS, BOTTLES AND INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES AND COMPOUNDS.

Station.	1920.	1921.
Accra	29	23½
Cape Coast	1 cart-load.	1
Secondee	2 cart-loads.	14 head-loads.
Coomassie	49 head-loads.	150 head-loads.

12.—WATER SUPPLY.

STATION.	PIPE-BORNE WATER.				WELLS.				TANKS.										BARRELS.			
	Source.	Lineal yards.	Public stand-pipes.	Private stand-pipes.	Public.		Private.		Public.						Private.				Native.		No	Mosquito-proof.
					No.	Mosquito-proof.	No.	Mosquito-proof.	Under-ground.	Mosquito-proof.	Above ground.	Mosquito-proof.	400 gallons or less.	Above 400 gallons.	Under-ground.	Mosquito-proof.	Above ground.	Mosquito-proof.	400 gallons or less.	Above 400 gallons.		
Accra	River Densu	54,727	57	665	—	—	162	147	2	—	—	—	—	98	139	117	49	—	7	41	39	
Cape Coast	—	—	—	—	10	6	221	193	13	4	22	16	35	68	140	136	50	160	11	381	367	
Secondee	Ana-kwan River	37,941	34	69	—	—	45	43	—	—	77	77	—	13	176	176	49	140	2	114	114	
Coomassie	—	—	—	—	16	3	142	31	3	3	—	—	—	1	44	44	37	7	3	367	115	

*Includes Railway, P.W.D., Harbour, and Government Quarters.

†Includes P.W.D., Bungalows, Offices, but not Col. Hospital.

TABLE IV.—continued.

13.—DRAINAGE (PUBLIC).

STATION.	MASONRY DRAINS.								EARTH DRAINS.					
	1920.				1921.				1920.			1921.		
	Lineal yards.	Lineal yards re-constructed.	Lineal yards repaired.	Lineal yards constructed.	Lineal yards.	Lineal yards re-constructed.	Lineal yards repaired.	Lineal yards constructed.	Lineal yards cleaned.	Lineal yards dug.	Frequency of cleaning.	Lineal yards cleaned.	Lineal yards dug.	Frequency of cleaning.
Accra	42,164	—	—	6,684	44,975	—	—	2,811	4,510	1,760	Quarterly.	61,954	10,325	Every week.
Cape Coast	21,344	50	—	1,444	22,016	45	—	672	8,673	—	Continuously.	6,953	670	Continuously.
Secondee	—	—	100	1,832	38,969	34	76	500	3,400	1,200	monthly.	9,004	7,233	Monthly.
Coomassie	10,162	420	—	1,849	11,339	420	—	1,177	14,900	—	4 times a month.	—	—	When necessary.

14.—CLEARANCE OF UNDERGROWTH, GRASS, WEEDS, ETC.

STATION.	1920.		1921.	
	Frequency of clearance.		Frequency of clearance.	
	Square yards grass, etc., cut and removed.	Square yards grass, etc., cut and removed.	Square yards grass, etc., cut and removed.	Square yards grass, etc., cut and removed.
Accra	836,863	Every 4th month.	2,083,181	Every 3rd month.
Cape Coast	839,749	Continuously.	6,050,606	Continuously.
Secondee	450,000	Twice quarterly.	1,421,966	Monthly.
Coomassie	3,744,025	Monthly.	2,995,423	Monthly.

TABLE IV.—*continued.*

15.—EXCAVATIONS AND LOW-LYING LAND.

STATION.	1920.							1921.						
	Pools and excavations.	Excavations filled up.	Amount of marsh raised and drained.	Pools, streams, etc., fish stocked.	Cubic yards material used for filling in.	Persons fined for making excavations.	Men employed daily for filling in.	Pools and excavations.	Excavations filled up.	Amount of marsh raised and drained.	Pools, streams, etc., fish stocked.	Cubic yards material used for filling in.	Persons fined for making excavations.	Men employed daily for filling in.
Accra	—	100	—	—	—	—	—	—	—	9,680 sq. yds.	—	Unknown	—	6
Cape Coast	12	56	74,055 sq. yds.	—	2,908	—	2	25	50	8,600 sq. yards	1	490	—	2
Seccondee	80	50	23,000 sq. yards	—	40,000	—	—	65	15	11,600 sq. yards	—	1,320	—	—
Coomassie	27	—	—	3	—	—	—	1,587	—	—	—	—	—	—

16.—OILING.

STATION.	1920.					1921.				
	Drains oiled.	Pools and excavations oiled.	Tanks and barrels oiled.	Men employed daily for oiling.	Drains oiled.	Pools and excavations oiled.	Tanks and barrels oiled.	Men employed daily for oiling.	Men employed daily for oiling.	Men employed daily for oiling.
Accra ..	234	113	428	2	1,554	5,401	159	6		
Cape Coast ..	184	845	605	4	651	4,661	580	4		
Seccondee ..	224	120	60	3	373	80	100	4		
Coomassie ..	2,267	27	—	4	3,282	1,587	46	5		

TABLE IV.
17.—INSPECTIONS AND PROSECUTIONS.

STATION.	1910.										1921.					
	Inspectors Employed.	Houses Inspected.	Houses Where Larvæ were found.	Notices against Larvæ.	Persons fined for Larvæ.	Notices <i>re</i> Insanitary Conditions.	Persons fined for Insanitary Conditions.	No. of Soda and Aerated Factories Inspected.	Inspectors Employed.	Houses Inspected.	Houses where Larvæ were found.	Notices against Larvæ.	Persons fined for Larvæ.	Notices <i>re</i> Insanitary Conditions.	Persons fined for Insanitary Conditions.	No. of Soda and Aerated Factories Inspected.
Accra	17	118,613	1,087	199	805	735	50	—	22	123,069	862	102	620	813	62	4
Cape Coast	10	26,205	137	353	98	49	42	—	12	25,639	321	667	251	80	67	—
Seccondée	9	53,381	191	230	127	369	88	—	9	46,632	231	113	174	447	125	1
Coomassie	5	17,255	121	46	103	349	723	1	6	39,479	384	384	289	1,12	782	1

TABLE V.

RETURN OF DISEASES AND DEATHS (IN AND OUT-PATIENTS) FOR THE YEAR 1921.

Diseases.	Remaining in Hospital at end of 1920.	YEARLY TOTAL.		Total Cases Treated.	Remaining in Hospital at end of 1921.	Remarks.
		New Cases.	Deaths			
INFECTIVE DISEASES.						
Beri-Beri	..	21	5	21	..	Number of Deaths not recorded.
Cerebro-Spinal Fever	..	19	..	19	..	
Chicken-pox	16	210	..	226	8	
Cholera	..	..	..	..	..	
Dengue	..	6	..	6	..	
Diphtheria	..	..	..	..	..	
Dysentery	2	708	26	710	5	
Endocarditis—infective	..	..	..	..	..	
Enteric	..	41	..	41	..	
Erysipelas	..	4	..	4	..	
Gonorrhœa	2	892	..	894	9	
Influenza	..	184	1	184	..	
Kala Azar	..	..	..	..	..	
Leprosy (a) Nodular	..	6	..	6	1	
(b) Anæsthetic	1	6	..	7	..	
Malaria (a) Tertian	..	904	..	904	..	
(b) Quartan	..	27	..	27	..	
(c) Aestivo-autumnal	5	1,827	2	1,832	1	
(d) Chronic Malaria	2	430	3	432	..	
(e) Black-water	2	19	9	21	..	
(f) Unclassified	..	2,728	7	2,730	11	
Measles	..	19	..	19	..	
Malta Fever	..	..	..	..	..	
Plague	..	..	..	..	..	
Pneumonia	4	366	43	370	7	
Rabies	..	..	..	..	..	
Relapsing Fever	..	..	..	..	..	
Rheumatic Fever	..	18	2	18	..	
Septicæmia	..	163	..	163	..	
Trypanosomiasis (Sleeping Sickness)	..	8	3	8	..	
Small-pox	6	3	..	9	1	
Syphilis (a) Primary	1	126	..	127	3	
(b) Secondary	5	141	1	146	4	
(c) Inherited	..	4	..	4	..	
Tetanus	..	13	8	13	..	
Tuberculosis	1	336	41	337	3	
Whooping Cough	..	118	..	118	..	
Yaws	..	487	..	487	..	
Yellow Fever	..	4	3	4	..	
Other Diseases	1	138	2	139	1	
INTOXICATIONS.						
Alcoholism	1	27	3	28	..	
Morphinism	..	..	..	..	..	
Others	..	3	..	3	..	
Anæmia	..	274	1	274	..	
Anæmia—Pernicious	..	1	..	1	..	
Diabetes	..	3	..	3	..	
Exophthalmic Goitre	..	19	..	19	..	
Gout	..	3	..	3	..	
Leucocythœmia	..	6	..	6	..	
Hodgkin's Disease	..	3	..	3	..	
Myxœdema	..	1	..	1	..	
Purpura	..	1	..	1	..	
Rickets	..	9	..	9	..	
Scurvy	..	1	..	1	..	
Rheumatism	1	2,160	1	2,161	1	
Other Diseases	2	902	14	904	..	
LOCAL DISEASES.						
Diseases of the Nervous System.						
Sub-section 1.						
Neuritis	1	34	1	135	1	
Meningitis	..	10	6	10	..	
Myelitis	..	3	..	3	..	
Hydrocephalus	..	1	..	1	..	
Encephalitis	..	..	..	..	..	
Abscess of Brain	..	2	2	2	..	
Congestion of Brain	..	..	..	..	..	
Other Diseases	..	63	3	63	..	
Carried forward	..	..	..	..	..	

RETURN OF DISEASES AND DEATHS (IN AND OUT-PATIENTS) FOR THE YEAR 1921.

Diseases.	Remaining in Hospital at end of 1920.	YEARLY TOTAL.		Total Cases Treated.	Remaining in Hospital at end of 1921.	Remarks.
		New Cases.	Deaths.			
Brought forward	..	..	..	..	..	
Sub-section 2.						
Apoplexy	..	13	2	13	..	
Paralysis	..	69	4	69	3	
Chorea	..	9	..	9	..	
Epilepsy	..	59	1	59	..	
Neuralgia	..	370	..	370	..	
Hysteria	..	59	—	59	..	
Other Diseases	1	61	1	62	1	
Sub-section 3.						
Mental Diseases						
Idiocy	..	4	..	4	..	
Mania	..	9	..	9	..	
Melancholia	..	5	..	5	..	
Dementia	..	4	2	4	..	
Delusional Insanity	..	7	..	7	..	
Diseases of the Eye—						
Conjunctivitis	1	2,053	..	2,054	2	
Keratitis	..	64	..	64	..	
Ulceration of Cornea	..	73	..	73	..	
Iritis	..	70	..	70	..	
Optic Neuritis	..	3	..	3	..	
Cataract	..	57	..	57	..	
Other Diseases	..	302	..	302	1	
Diseases of the Ear—						
Inflammation	..	633	..	633	..	
Other Diseases	..	347	..	347	..	
Diseases of the Nose—						
.. ..	..	55	..	55	..	
Diseases of the Circulatory System—						
Pericarditis	..	11	1	11	..	
Endocarditis	2	11	..	13	..	
Valvular Mitral	..	124	1	124	..	
„ Aortic	..	31	..	31	..	
„ Tricuspid	..	4	..	4	..	
„ Pulmonary	..	4	..	4	..	
Arterial Sclerosis	..	16	..	16	..	
Aneurism	2	10	1	12	..	
Other Diseases	..	89	2	89	1	
Diseases of the Respiratory System—						
Laryngitis	..	48	..	48	1	
Bronchitis	3	1,676	13	1,679	4	
Broncho-pneumonia	2	114	9	116	2	
Abscess of Lung	..	..	..	..	..	
Gangrene of Lung	..	..	..	..	..	
Emphysema	..	4	..	4	..	
Pleurisy	..	30	3	30	2	
Empyema	..	11	..	11	2	
Other Diseases	1	188	1	189	..	
Diseases of the Digestive System—						
Stomatitis	1	361	..	362	..	
Caries of teeth	..	1,000	..	1,000	..	
Glossitis	..	17	..	17	..	
Sore Throat	..	397	..	397	..	
Inflammation of Tonsils	..	320	..	320	..	
Gastritis	1	546	1	547	..	
Ulceration of Stomach	..	3	..	3	..	
Hæmatemesis	..	12	..	12	..	
Dilatation of Stomach	..	2	..	2	..	
Stricture of Stomach	..	2	..	2	..	
Dyspepsia	..	702	..	702	..	
Enteritis	..	597	6	597	..	
Appendicitis	..	26	3	26	..	
Colitis	..	85	2	85	1	
Ulceration of Intestines	..	26	3	26	1	
Sprue	..	..	..	..	..	
Carried forward	..	..	..	..	..	

RETURN OF DISEASES AND DEATHS (IN AND OUT-PATIENTS) FOR THE YEAR 1921.

Diseases.	Remaining in Hospital at end of 1920.	YEARLY TOTAL.		Total Cases Treated.	Remaining in Hospital at end of 1921.	Remarks.
		New Cases.	Deaths.			
Brought forward	..	..	..	..	..	
Diseases of the Digestive System— <i>contd.</i>						
Hernia	4	271	7	275	3	
Diarrhœa	2	1,054	4	1,056	..	
Constipation	..	4,746	..	4,746	..	
Colic	..	578	..	578	..	
Hæmorrhoids	..	108	..	108	..	
Pancreatitis	..	5	1	5	..	
Hepatitis—Acute	..	164	3	164	..	
Abscess	..	36	5	36	..	
Cirrhosis	..	10	4	10	..	
Jaundice	..	69	1	69	2	
Peritonitis	..	14	8	14	1	
Ascites	..	26	1	26	..	
Other Diseases	..	264	..	264	2	
Diseases of the Lymphatic System—						
Splenitis	..	151	..	151	..	
Inflammation of Lymphatic Gland	4	316	..	320	1	
Suppuration of Lymphatic Gland	..	130	..	130	..	
Lymphangitis	..	35	..	35	..	
Elephantiasis	..	77	..	77	2	
Other Diseases	..	5	1	5	..	
Diseases of the Urinary System—						
Acute Nephritis	1	87	13	88	5	
Bright's Disease	1	42	4	43	..	
Pyelitis	..	5	..	5	..	
Calculus	..	1	..	1	..	
Renal Colic	..	33	..	33	..	
Cystitis	..	130	1	130	1	
Vesical Calculus	..	1	..	1	..	
Suppression	..	11	..	11	..	
Hæmaturia	..	33	..	33	..	
Chyluria	..	..	..	..	..	
Other Diseases	..	5	1	5	..	
Diseases of the Generative System—						
Male Organs :—						
Urethritis	..	83	1	83	..	
Gleet	..	21	..	21	..	
Stricture	..	129	2	129	1	
Prostatitis	..	12	..	12	..	
Soft chancre	1	234	..	235	3	
Condyloma	..	2	..	2	..	
Inflammation of Scrotum	..	20	1	20	1	
Hydrocele	..	106	..	106	..	
Orchitis	1	177	..	178	3	
Epididymitis	1	100	—	101	..	
Abscess of Testicle	..	1	..	1	..	
Other Diseases	1	333	..	334	9	
Female Organs :—						
Ovaritis	..	17	..	17	..	
Ovarian Cyst	..	4	1	4	..	
Endometritis	..	178	..	178	..	
Displacement of Uterus	..	16	..	16	..	
Vaginitis	..	53	2	53	1	
Amenorrhœa	..	60	..	60	..	
Dysmenorrhœa	..	69	..	69	..	
Menorrhagia	..	38	..	38	..	
Leucorrhœa	..	24	—	24	..	
Abortion	1	34	..	25	..	
Delayed Labour	..	26	3	26	..	
Postpartum Hæmorrhage	..	4	..	4	..	
Retained Placenta	..	3	..	3	..	
Premature Birth	..	3	1	3	..	
Puerperal Septicœmia	..	15	1	15	..	
Mastitis	..	39	..	39	..	
Abscess of Breast	..	13	..	13	..	
Other Diseases	..	90	..	90	..	
Carried forward	..	..	..	..	..	

RETURN OF DISEASES AND DEATHS (IN AND OUT-PATIENTS) FOR THE YEAR 1921.

Diseases.	Remaining in Hospital at end of 1920.	YEARLY TOTAL.		Total Cases Treated.	Remaining in Hospital at end of 1921.	Remarks.
		New Cases.	Deaths.			
Brought forward	..	..	..	..	..	
Diseases of Organs of Locomotion—						
Osteitis	1	94	..	95	1	
Arthritis	..	752	..	752	4	
Spondylitis	1	22	..	23	..	
Bursitis	..	210	..	210	1	
Diseases of Connective Tissue— ..						
Cellulitis	1	692	..	693	1	
Abscess	9	918	4	927	10	
Other Diseases	..	155	..	155	1	
Diseases of the Skin—						
Urticaria	..	78	..	78	..	
Eczema	..	393	..	393	1	
Boil	..	484	..	484	..	
Carbuncle	2	18	..	20	..	
Herpes	..	55	..	55	..	
Psoriasis	..	8	..	8	..	
Tinea	..	781	..	781	..	
Scabies	..	661	..	661	..	
Acne	..	37	..	37	..	
Prickly Heat	..	24	..	24	..	
Ulcers	19	5,318	15	5,337	63	
Other Diseases	1	691	..	692	..	
Injuries—General	8	253	9	261	1	
Local	36	7,335	25	7,371	36	
Surgical Operations	..	..	..	..	..	
(a) Major	..	576	10	576	6	Not included in totals.
(b) Minor	..	1,060	..	1,060	..	
Tumours	..	314	9	314	5	
Malformations	..	12	..	12	..	
Poisons	..	44	2	44	..	
Parasitis—Animal	..	..	..	..	..	
Protozoa	..	..	..	..	..	
Trematoda (Flukes)	..	139	..	139	..	
Cestoda—						
Tœnia Solium	..	289	..	289	..	
Tœnia Saginata	..	285	..	285	..	
Unclassified	..	6	..	6	..	
Nematoda—						
Ascaris	..	457	..	457	..	
Trichocephalus Dispar	..	9	..	9	..	
Trichina	..	1	..	1	..	
Dracunculus	15	889	..	904	3	
Filariasis	..	9	..	9	..	
Strongylus	..	3	..	3	..	
Ankylostomiasis	1	124	2	125	1	
Oxyuris	..	6	..	6	..	
Insecta—						
Myiasis	1	2	..	3	..	
Chiggers	..	52	9	52	2	
Other Diseases	..	97	..	97	..	
Cases not diagnosed	..	840	..	840	..	
Total	179	57,263	383	57,442	242	

APPENDIX A.

ANNUAL REPORT OF THE MEDICAL RESEARCH INSTITUTE FOR THE YEAR
1921.CONTENTS.

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APPENDIX A.

MEDICAL RESEARCH INSTITUTE.

ACCRA LABORATORY REPORT

FOR THE YEAR

1921.

INTRODUCTION.

The work of the Laboratory at Accra was carried on throughout the year. The laboratory itself is still housed in the same building which, having been designed for an entirely different end, has never been suitable for such a purpose, and is both inconvenient and inadequate. With an increased staff the lack of accommodation is becoming acute, and the extension of the scope of our work is seriously handicapped.

The staff consisted of Dr. J. W. S. Macfie, Director of the Medical Research Institutes of Dr. A. Ingram and Dr. J. F. Corson, the Pathologists, and of Mr. F. W. Abbott, the Laboratory Assistant. Mr. F. Leeson, the newly appointed Laboratory Superintendent, did not assume duty until the beginning of November. Mr. P. C. Paittoo, the Laboratory Attendant, discharged his duties throughout the year in a satisfactory manner, and Mr. E. E. Bannerman assisted during the first seven months of the year in the preparation of media for the bacteriological examination of samples of water.

Dr. Macfie was in charge of the laboratory from the beginning of the year until the 7th of August when he went on leave from which he had not returned at the end of the year. In his absence his duties devolved upon Dr. Ingram. Dr. Corson, although appointed to the post of Pathologist in December, 1920 did not take up his duties as such until the following May owing to shortage of Medical Staff, thus, as he proceeded on leave upon the 17th of October, his period of actual work as Pathologist was limited to about five and a half months. For five months such hospitality as the laboratory was able to afford was extended to Mr. R. Simmons, the Analytical Chemist, who was at the time without a laboratory of his own in which to work.

During the year one of the motor cars fitted for use as a mobile laboratory was delivered, and has already proved of considerable service. We are indebted to Col. P. F. Whittall, the Director of Transport, for the interest he took in the construction of this vehicle and for a number of ingenious contrivances embodied in it. The second car, which is designed more particularly for rough work and short excursions, is expected to be ready for use early in the new year.

Following the instructions of His Excellency the Governor, the Annual Report of the Medical Research Institute consists of a general survey of the work done in the laboratory during the course of the year. Accounts of original research work, and contributions by Medical Officers are not included in it.

ACKNOWLEDGEMENTS.

The staff of the laboratory has received many gifts of specimens and material during the year, and wishes especially to thank the following for their contributions:—Dr. K. B. Allan, Mr. F. G. Ashby, Mr. A. Bacot, Mr. E. E. Bannerman, Dr. J. B. Bate, Major W. P. Beal, Dr. J. H. Beveridge, the Rev. T. L. Beveridge, Dr. L. H. Booth, Mr. W. L. Braybrooke, Dr. S. L. Brohier, Prof. A. Castellani, Dr. Nanka Bruce, Mr. R. H. Bunting, Mr. H. A. Dade, Dr. J. M. Dalziel, Dr. A. M. Dowdall, Dr. T. A. Dowse, Dr. H. Andrew Foy, Dr. M. W. Fraser, Mrs. Heath, the late Mr. J. Hutton, Capt. P. Jeffs, Dr. G. E. H. LeFanu, Mr. H. J. Loder, Mrs. Lorena, Dr. A. C. Lorena, Dr. T. Mensah-Annan, Dr. A. J. R. O'Brien, Dr. P. S. Selwyn-Clarke, Mr. R. Simmons, Mr. O. D. Smart, and Dr. J. R. C. Stephens. We are particularly grateful to Dr. H. Andrew Foy who, hearing that we were studying West African Ceratopogoninae, collected for us a great number of biting midges at Lagos. His material proved of special interest to us and contained some species that were new to science, one of which we have had the pleasure of dedicating to him. We should also wish to say that the collections of insects sent to us by Dr. Fraser from Krachi, and by Dr. Brohier from Wa were most interesting, and included species not previously known to occur in these localities.

We have again to acknowledge indebtedness to the Imperial Bureau of Entomology for help generously given in the identification of entomological material. We also gratefully acknowledge the assistance rendered to us by the staff of the Liverpool School of Tropical Medicine, Prof. R. Newstead and Prof. Warrington Yorke again extending to us the privilege of working in their laboratories, and Mr. T. Southwell and Miss A. M. Evans most kindly undertaking the identification of specimens of parasitic worms and of fleas. Our thanks are also due to Dr. A. D. Gardner of the Standards Laboratory, Oxford, for material for carrying out Dreyer's Typhoid Agglutination tests, and for assistance in overcoming some difficulties which we had encountered in preserving such materials in this climate.

J. W. S. MACFIE,
Director, Medical Research Institute.

Accra,
27th February, 1922.

A. INGRAM,
Pathologist.

ROUTINE EXAMINATIONS.

(I)—EXAMINATIONS OF CLINICAL MATERIALS.

The number of examinations of clinical material carried out during the year was somewhat greater than in the preceding years (See Table I). This increase was partly due to the increase of staff which enabled more attention to be devoted to certain lines of work than had previously been possible. As in previous years most of the specimens were sent for examination by the Senior Medical Officer in charge of the European Hospital and the Medical Officer in charge of the Native Hospital at Accra; a considerable number were, however, also forwarded by the Medical Officer in charge of the Prison, the Asylum, and Cantonments, Accra. The newly formed Venereal Clinic at Accra accounted for a considerable addition to the number of specimens received for complement-deviation tests, and during the time Dr. Beveridge of the Scottish Mission was at Christiansburg we examined a number of specimens sent from her clinic and from the schools inspected by her. Apart from these sources the number of specimens received for routine examinations was not great, so that the records may be taken as some indication of the more common diseases prevailing in Accra and its immediate neighbourhood.

TABLE I.—EXAMINATIONS OF CLINICAL MATERIALS.

Nature of examination.	Europeans.	Africans.	Totals.
Blood examinations	295	902	1197
Examinations of faeces	66	192	258
Examinations of urine	3	31	34
Examinations of sputum	15	107	122
Miscellaneous examinations	—	—	148
Total ..	—	—	1759

The relatively small number of specimens received from out-stations shows clearly that the usefulness of a pathological laboratory to the clinician varies inversely with the distance it is away from him. From stations distant only a day or two we receive a fair number of specimens, but even these are more or less restricted, being chiefly such as can be readily sent by post (blood films, smears of sputum, etc.); from stations more remote only occasional requests reach us. It had been hoped to bring the resources of the pathological laboratory nearer to the Medical Officers by starting branches (temporary or permanent) at Sekondi and at Kumasi, and by travelling. This development, which depended on an increase of staff and a liberal provision for travelling has had to be abandoned owing to the present financial condition of the Colony which has necessitated drastic reductions in estimates, amounting to no less than 40 per cent. in the case of the Medical Research Institute.

BLOOD EXAMINATIONS.

Over two-thirds of the examinations of clinical material carried out during the year were blood examinations. This preponderance was due to the resumption at the request of the Senior Sanitary Officer of the examination of the blood of children attending the schools in the towns and villages in the neighbourhood of Accra.

Of 627 native children examined in this way 261, or 41.6 per cent., were found to be infected with malaria. Only a single blood film from each child was examined, often a rather unsatisfactory film at that, so that the actual infection rate was probably considerably higher. As regards the species of malaria parasites found, *Plasmodium falciparum* (Malignant Tertian or M. T.) was present in the blood of 233 children, *P. vivax* (Simple Tertian or S. T.) in thirteen, and *P. malariae* (Quartan or Q) in twenty-one. Crescents were found in only four children.

TABLE II.—BLOOD EXAMINATIONS FOR MALARIA PARASITES

	Number Examined.	Number found infected.	Percentage found infected.	Species of malaria parasites.		
				M.T.	S.T.	Q.
<i>Africans— School children</i>	627	261	41.6	233	13	21
<i>Hospital patients</i>	122	19	15.0	7	12	—
<i>Europeans—patients</i>	207	49	23.6	34	16	—

In Table II these results are compared with the results of examinations of European and African patients whose blood was sent to us with the request that we should search for malaria parasites. The small percentages of the patients in whom such parasites were found as compared with the greater percentage in apparently healthy children is notable as indicating the relative difficulty of diagnosing malaria in adult Africans and in Europeans addicted to the use of quinine. It should be noted also that as compared with previous years the prevalence of Simple Tertian malaria (S.T.) was apparently increased. This may have been due to a proportion of the cases of malaria having been relapses from infections contracted during the war in countries in which this form of the disease is more prevalent than it is in West Africa. Crescents as usual in West Africa were but rarely observed: in the school children as already stated only four times, in the European patients only twice, and in the African patients not once.

Wassermann tests were carried out with 172 samples of blood serum, thirty-four from Europeans and 138 from Africans. During the latter part of the year a simultaneous Sachs-Georgi test (as described by Taneguchi and Yosinare, British Medical Journal, 13th August, 1921, pp. 239 to 240) was performed, and in all the thirty-three cases tested in this way the readings corresponded with those given by the Wassermann test. This technique therefore, on account of its relative simplicity would probably prove useful and practicable in out-stations, and should be of value to Medical Officers who are unable to send serum to Accra for examination or who require to know the result of a complement-deviation test but cannot afford any delay. In a number of cases the so-called Formolgel test was also tried by Mr. Simmons, but although the results generally corresponded with those given by the simultaneous Wassermann test they were not sufficiently constant to warrant the recommendation of the technique for use of Medical Officers even in remote districts.

During the year a somewhat larger number of typhoid agglutination tests than usual were required. Dreyer's macroscopic test has been employed in these examinations, and we have to thank Dr. Gardner of the Standards Laboratory, Oxford, for generously supplying us with materials.

EXAMINATIONS OF FAECES.

The examinations of faeces call for but little comment. As usual the majority of the specimens were from cases of dysentery and diarrhoea and the usual parasitic and coprozoic organisms were detected in them with about the usual frequency. A rather larger number of specimens than in previous years were from cases suspected of being typhoid fever, but from none of them was an organism of the group isolated by culture. In the specimens from Africans the eggs of worms were frequently found, namely those of *Ascaris lumbricoides* thirty-one times, hookworm twenty-nine times, *Trichuris trichiura* fourteen times, and *Oxyuris vermicularis*, *Schistosoma mansoni* and *Taenia* sp. once each.

Thomson and Robertson (Jl. Trop. Med. and Hyg., XXIV, p. 289) have claimed that the occurrence of Charcot-Leyden crystals in the faeces is associated with amoebic dysentery, and is almost pathognomonic of the disease. We have observed these crystals in cases of dysentery at Accra, but at present our observations are too few to be brought forward, and we have not yet attempted to determine if their presence is limited to dysentery cases or if they also appear in connexion with other intestinal infections or affections.

The study of the species of fungi of the Genus *Monilia*, to which reference was made in the last report, was continued during the year. From the faeces, of a European with dysenteric symptoms a fungus was isolated which appeared to resemble most closely *Monilia tropicalis*. From the faeces of two Africans suffering from a peculiar form of diarrhoea two fungi were isolated both of which appeared to be undescribed species and for which therefore the names *M. africana* and *M. enterocola* were proposed.

Mention may be made here of a case of intestinal myiasis which will be more fully recorded later. The patient was a Hausa woman under the care of Dr. G. E. H. Le Fanu at Saltpond, who very kindly sent us a sample of the faeces containing the larvae which proved to be those of a little fly named *Aphiochaeta xanthina*, Speiser.

EXAMINATIONS OF URINE.

The results of the examinations of the very small number of samples of urine submitted call for no special comments. Bilharziosis was the infection most frequently suspected, and five cases of this disease were diagnosed.

EXAMINATIONS OF SPUTUM.

The majority of the samples of sputum were sent in with the request that they should be examined for tubercle bacilli, indeed this was the only examination asked for in the case of Europeans. In this connexion it may be mentioned that some experiments which we carried out in conjunction with Dr. Corson have proved that cockroaches not only devour sputum greedily and pass out from their bodies the tubercle bacilli that may be contained therein, but also that these bacilli thus passed are alive and virulent and are capable of infecting animals with tuberculosis.

In the case of Africans the other examinations most frequently required were for pneumonia, influenza, spirochaetosis, and moniliasis. It may be noted here that since the pandemic of 1918 influenza has never totally disappeared and has annually accounted for a considerable number of examinations coming under the above heading as well as for several autopsies.

Particular attention was paid during the year to the fungi of the Genus *Monilia* found in chest and lung diseases, and cultures were obtained of several strains of these organisms from sputum and other pathological material. One species, originally isolated from a case of pulmonary tuberculosis and subsequently again found in a non-tuberculous patient, was described by us and named *Monilia accraensis*.

MISCELLANEOUS EXAMINATIONS.

Examinations of clinical materials of all kinds not already dealt with are included under this heading, and also a number of examinations of sick animals, slaughter house specimens, etc. The majority of the examinations call for no special comment.

One case that was of interest was an example of otomycosis, the infection of the ear with a fungus. In this instance the patient was a European, and the fungus was growing in the external auditory meatus and hanging down like a veil in front of the *membrana tympani*. The fungus, which was studied in cultures, was a species of the Genus *Sterigmatocystis*.

Two cases of Dermatitis Papillaris Capillitii were carefully investigated by Dr. Corson. The following are the brief notes on them which he has handed to us for inclusion in this report.

“Case I. An African man, a native of the Gold Coast, aged 42 years. Disease began six months previously as small pimple or wart on the back of neck. Others appeared, and condition extended gradually to present state. Never painful, but itched at times. Never any bleeding or surface exudation or abscess. Condition on examination: margin of hair, back of neck, raised uneven area of skin; an inch and a quarter transversely by three-quarters of an inch vertically. Consisted of a number of closely set hard wart-like elevations of skin with rounded tops, not fissured, and about one-sixteenth to one-eighth of an inch in diameter and height. There were a few discrete papules on hairy scalp a little distance away from the main lesion. Hairs growing from the affected area not loose. The mass was excised and the more outlying papules touched with nitric acid. The wound healed well, but about a month later other papules had appeared and part of the scar showed keloid growth. Microscopic sections of the excised portions: the epithelium is hypertrophied and branching finger-like processes extend into the corium. There is a leucocytic infiltration of the tissues of the corium.”

“ Case II. An African boy aged 17 years, seen 1st March, 1921. History: first noticed August 1920 as single small wart or pimple which exuded serum; put native medicine on it and noticed that where blood touched neighbouring skin other pimples formed. In December it had grown into a definite large mass. Sometimes itched but never painful. Condition on examination: margin of hair at back of neck, wart-like irregular flattened elevation of skin three-quarters of an inch transversely and half an inch vertically. Hairs growing from area firm. Appears to be slightly painful when squeezed. In addition to the main lesion there are nine small discrete papules on surrounding skin mostly above and within the hairy scalp area.”

From a mule belonging to the Sanitary Department a strain of trypanosome was isolated to which brief reference may be made. A guinea-pig and a *M. rattus* were inoculated with blood from the mule; the rat did not become infected, but the guinea-pig did, the parasites appearing in its blood for the first time on the 17-18th day and the animal dying on the 66th day. The strain was subsequently carried on in black rats (*M. rattus*) to the seventh generation, and then died out. In this period twenty-four rats were used, three (including the last two) did not become infected, three were killed at some stage after infection, and the remaining eighteen survived for from twelve to forty-three days, average twenty days. The trypanosome was of the polymorphic type and eventually proved to be *T. pecaui*; but although the original mule and all the animals infected from it were carefully examined posterior nuclear forms were only observed in one rat and on one occasion, that was in one of the rats of the third generation on the eighteenth day of its infection. Even in this rat these forms were scanty, and none were seen in which the nucleus was actually posterior to the blepharoplast. This case, which is the second of its kind which we have encountered at Accra, indicates how difficult it may sometimes be to distinguish *T. pecaui* from *T. gambiense* in animals.

An interesting spirochaete, probably derived from a dog, was discovered by Mr. Abbott in the blood of a rat which had been inoculated from a dog suffering from trypanosomiasis (*T. congolense* infection). This spirochaete was subsequently studied by Dr. Corson, and was taken by him to England in rats for further examination. The parasite was shown by Prof. Yorke and one of us (J. W. S. M.) at the laboratory meeting of the Royal Society of Tropical Medicine and Hygiene held in London on the 17th of November, 1921. The spirochaete appeared to be indistinguishable from *S. laverani*. In support of the probability that the spirochaete was derived from the dog it may be mentioned that subsequently it was proved by inoculation from a rat that a dog could be infected with it. It is interesting to note in this connexion that Cazamain (*Tropical Diseases Bulletin*, 18, p. 301) has recorded a case of fever resembling sodoku (rat-bite fever) which was due to the bite of a dog.

A considerable number of experiments were carried out during the year with a view to determining if the fruit of the ackee (*Blighia sapida*) were toxic in the Gold Coast. In these experiments we had the advantage of collaboration with Mr. Simmons who had assisted Dr. H. H. Scott in his experiments with this fruit in Jamaica. It will be remembered that Scott found in Jamaica that in certain states (unripe, over-ripe, etc.) the ackee was highly poisonous and caused the disease known as “vomiting sickness,” but that Connal and Ralston, when attempting to confirm these observations at Lagos, obtained inconstant and conflicting results. Our experiments, which are still incomplete, tend to show that at Accra the ackee is but slightly if at all poisonous, even very large doses of extracts of over-ripe or otherwise unsound fruits being apparently almost harmless to rats, dogs, and monkeys. The only dog which died during the experiments, and it had received a very large dose, but may none the less have died from quite a different cause, showed no fatty change in the liver such as is characteristic of “vomiting sickness.”

(II).—POST-MORTEM EXAMINATIONS.

During the year 107 post-mortem examinations were made. The causes of death are given in the table (see Table III.). As in previous years the greatest number of deaths was due to pulmonary diseases which in this year accounted for 22.4 per cent. of the total. Some of the pathological conditions found, which were of particular interest, are briefly referred to here, others will be more fully described later.

At a number of the autopsies made at Accra during the last three years the condition of the liver has riveted attention because of its resemblance to that usually regarded as suggestive of Yellow Fever. To the naked eye the liver in these cases is conspicuously fatty on section and may present an

TABLE III.—POST-MORTEM EXAMINATIONS.

Cause of death.	Europeans.	Africans.	Cause of death.	Europeans.	Africans.
Aneurysm, Aortic ..	—	2	Intussusception ..	—	1
Ankylostomiasis ..	—	3	Malarial fever ..	—	2
Appendicitis	—	1	Mania, exhaustion from	—	2
Bronchitis, capillary	—	1	Morbus cordis ..	—	4
Broncho-pneumonia	—	8	Nephritis	—	1
Burns	—	2	Pericarditis, acute		1
			tuberculous	—	5
Cerebral hæmorrhage	—	1	Peritonitis, general ..	—	
Cerebral softening ..	—	1	„ tuberculous ..	—	1
Cerebro-spinal meningitis	—	5	Phthisis pulmonalis ..	—	4
Cerebral tumour ..	—	1	Pleurisy	—	2
Cirrhosis of liver ..	—	1	Pneumonia, lobar ..	1	8
Diarrhoea, infantile ..	—	1	Septicaemia	—	3
Drowning	—	3	Suicide : hanging ..	—	3
Duodenal ulcer ..	—	1	„ cut throat ..	—	1
Dysentery : amoebic	—	3	„ stabbing ..	—	1
„ bacillary	—	1	Tetanus	—	1
Enteric fever ..	—	1	Tuberculosis, general	—	1
Fracture of Skull ..	—	6	„ miliary ..	—	1
Gas gangrene ..	—	1	Unknown cause ..	—	3
General paralysis of			Wounds, gun-shot ..	1	8
insane	—	1	„ stabbing ..	—	2
Hæmopericardium ..	1	—	Yellow fever	—	1
Hepatic abscess ..	—	1			
Hepatitis, acute ..	—	3		3	104
					107

appearance indistinguishable from the “boxwood” liver of yellow fever. The kidneys also may show signs of fatty change. Petechial hæmorrhages may be present upon the mucous and serous membranes and jaundice is sometimes distinctly present in the bodies when examined on the mortuary table. So far as our experience goes, however, the stomach and intestines do not contain “coffee ground” material, and the microscopical examination of sections of the liver while showing abundance of fat do not show the advanced zonal necrobiotic changes characteristic of yellow fever. This condition of the viscera, which we have found almost invariably associated with pneumonic or broncho-pneumonic conditions of the lungs, will be more fully described later. Attention is directed to it here because it is not unlikely that it has lead in the past, and probably will lead in the future, to deaths being attributed erroneously to yellow fever.

An interesting case which came under the notice of one of us (A.I.) was an example of the rupture of the intestine by the common parasitic worm *Ascaris lumbricoides*. The subject was a native girl about twelve or thirteen years of age, in whose abdominal cavity there were found after death a considerable quantity of faeculent fluid and four specimens of *Ascaris lumbricoides*, three dead and one still living. On examining the intestine a small oval perforation was found in the wall of the ileum about six feet from its termination. The ileum contained a number of living *Ascaris* worms and showed also several ulcers resembling typhoid lesions and swollen Peyer’s patches, and it appeared probable that the rupture of the intestine had been caused by the perforation of one of the ulcers by an *Ascaris*. A complete account of this case will be published later by Dr. Ingram.

Another remarkable case was the rupture of the left auricular appendix of the heart. Particular interest attaches to this example of an extremely rare condition because the subject, a European, was known to be suffering from an obscure cardiac complaint and had been warned by his medical adviser, Dr. C. V. Le Fanu, of the critical condition of his heart. A full account of this case will be published later.

The following report, written by Dr. Corson and handed to us for inclusion here, describes a case examined by him of psammoma of the *dura mater* associated with an exostosis of the skull.

"This tumour was found at the autopsy on a young Kroo man on the 23rd of February, 1921. Very little is known of his condition previous to his death. A few months before he was an in-patient of the native hospital, Accra, with obscure nervous and mental symptoms, and ran away from there. A little later, and nearly three months before his death, he was sentenced to imprisonment for theft. He was found to be incapable of doing ordinary prison labour and about a week before his death was found to be ataxic and very dull and apparently imbecile. One day before his death he became unconscious with loss of control of the sphincters.

"The tumour was situated in the middle fossa of the skull projecting against the brain in the region of the Sylvian fissure and neighbouring portions of the temporo-sphenoidal and parietal lobes on the left side. It was a firm lobulated tumour arising from the *dura mater* and was covered by the pia-arachnoid. There was no invasion of the brain substance though, owing to the lobulated form of the growth, portions of the brain were included as laminae in the inter-lobular fissures of the tumour. The following were the measurements taken three months after the removal of the tumour during which time it had been preserved in 5 per cent. formalin: from before backwards 11.5 cm., from above downwards 7.5 cm., transverse diameter 7.5 cm., weight 350 grammes. On microscopical examination of sections the tumour showed numerous epithelioid cells with strands of white fibrous tissue. There were numerous granules surrounded by concentrically arranged cells, and a whorled arrangement of cells and fibres constituting the typical appearance of a psammoma.

"There was a large exostosis projecting into the tumour, a conical, blunt-pointed exostosis projecting transversely inwards for a distance of 2.5 cm. into the outer aspect of the tumour. The exostosis arose from the posterior part of the inner surface of the squamous part of the temporal bone just above its junction with the petrous portion. On section the bone was seen to be of dense texture."

(III).—EXAMINATIONS OF RATS.

Two hundred and seventy rats were received for examination during the year from the Medical Officer of Health, Accra. None was found infected with plague. The numbers examined each month and the species, are shown in Table IV. The total number of *M. rattus*, it will be noted, exceeded that of *C. gambianus*, forming 50.7 per cent. of the rats examined.

TABLE IV. EXAMINATIONS OF RATS.

Species of rat.	1921.												Totals.
	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
<i>Mus rattus</i>	13	22	11	11	5	11	3	26	7	9	16	3	137
<i>Mus decumanus</i> ..	1	—	—	3	1	—	1	2	2	5	10	3	28
<i>Cricetomys gambianus</i>	3	4	12	6	7	4	2	14	19	16	12	6	105
Totals ..	17	26	23	20	13	15	6	42	28	30	38	12	270

It has previously been pointed out (Report of the Accra Laboratory for the year 1918) that although *M. rattus* is very frequently infected with *Trypanosoma lewisi*, *C. gambianus*, which is much more heavily infested with ectoparasites, is not naturally infected with this parasite. This species of rat is, however, capable of being infected by inoculation as was shown by the following experiment. Blood (1 c.c) from the heart of a *M. rattus* heavily infected with *T. lewisi* was inoculated into the thigh muscles of a *C. gambianus*. Trypanosomes appeared in the peripheral blood of the latter animal on the fourteenth day, but the infection did not last long, the parasites soon again disappearing. On the 16th day, when trypanosomes were still present in the blood, a sub-inoculation was made from this animal into another *C. gambianus*: no infection resulted.

(IV).—EXAMINATIONS OF WATER.

One hundred samples of the Accra water, and five samples of locally manufactured aerated waters were examined bacteriologically. These examinations, which were carried out for the Sanitary Department, are more particularly the concern of the Senior Sanitary Officer, and the results of the examinations will no doubt be considered by him in his report if necessary.

(V).—EXAMINATIONS OF MOSQUITOS AND THEIR LARVAE, AND OTHER ENTOMOLOGICAL NOTES.

Five hundred and thirty-two samples containing mosquito larvae, submitted for identification by the Medical Officer of Health, Accra, Dr. P. S. Selwyn-Clarke, were examined during the year. The number of samples submitted each month, and the species of mosquitos found in them are shown in Table V.

TABLE V.—EXAMINATIONS OF SAMPLES OF MOSQUITO LARVAE.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.	Percentage occurrence in the samples.
Number of samples.	20	16	6	31	58	37	59	77	100	48	38	42	532	
<i>S. fasciata</i> , F.	18	13	6	29	46	20	50	50	45	30	35	39	381	71.6
<i>C. fatigans</i> , Wied	2	4	—	4	5	16	8	22	38	16	3	4	122	22.9
<i>C. thalassius</i> , Theo. ..	—	—	—	—	3	1	2	2	4	2	—	—	14	2.6
<i>A. costalis</i> , Loew. ..	—	—	—	—	4	—	—	3	3	2	—	—	12	2.2
<i>C. tigripes</i> var. <i>fuscus</i> , Theo.	—	—	—	—	—	1	—	1	7	2	—	1	12	2.2
<i>C. decens</i> , Theo.	—	—	—	—	2	1	1	3	2	1	—	—	10	1.8
<i>C. tritaeniorhynchus</i> , Giles	—	—	—	—	—	—	—	1	3	1	—	1	6	1.1
<i>A. funestus</i> , Giles ..	—	—	—	—	—	—	—	—	2	1	—	—	3	0.5
<i>Culic. nebulosa</i> , Theo. ..	—	—	—	—	—	2	—	1	—	—	—	—	3	0.5
<i>A. mauritanus</i> , Gpré ..	—	—	—	—	—	—	—	—	1	—	—	—	1	0.18
<i>C. annulioris</i> , Theo. ..	—	—	—	—	—	—	—	—	1	—	—	—	1	0.18
<i>Cyatho. fusca</i> , Theo. ..	—	—	—	—	—	—	1	—	—	—	—	—	1	0.18
<i>Eretmo. quinquevittatus</i> , Theo.	—	—	—	—	—	—	1	—	—	—	—	—	1	0.18
<i>Mimo. hispida</i> , Theo. ..	—	—	—	—	—	—	—	—	1	—	—	—	1	0.18
<i>Mimo. mimomyiaformis</i> , Newst.	—	—	—	—	—	—	—	—	1	—	—	—	1	0.18
<i>O. apicoannulatus</i> , Edw. ..	—	—	—	—	—	1	—	—	—	—	—	—	1	0.18
<i>O. irritans</i> , Theo.	—	—	—	—	—	1	—	—	—	—	—	—	1	0.18
<i>S. luteocephala</i> , Newst. ..	—	—	—	—	—	—	1	—	—	—	—	—	1	0.18
<i>S. metallica</i> , Edw.	—	—	—	—	—	—	1	—	—	—	—	—	1	0.18
<i>simpsoni</i> , Theo.	—	—	—	—	—	1	—	—	—	—	—	—	1	0.18

Twenty species were found in the samples as compared with only five species in 1920. Possibly the heavy rain-fall of 1921 may to some extent account for this, but it is more likely that it was due to the fact that the Sanitary Department is gradually extending its sphere of influence and is extending the area of inspection and thus tapping new sources of supply. Two species of mosquito new to Accra were reared from larvae, namely *Eretmopodites quinquevittatus*, Theo. and *Culex annulioris*, Theo.; the addition of these two brings the total number of species recorded as occurring at Accra up to sixty-four.

An examination of the table (Table V.) shows that three different species of *Anopheles* occurred in the samples sent in by the Sanitary Department as compared with only one last year, and that the percentage of the samples harbouring *Anopheles* was 2.8 as compared with 0.1 in 1920. Attention is directed to the occurrence of *Culex tigripes*, Gpr. var *fuscus*, Theo. in 2.2 per cent. of the samples because it is not commonly recognised that the larvae of this mosquito, being carnivorous, are most efficiently on the side of man in his efforts to destroy harmful and irritating mosquitos. The larvae of *C. tigripes* subsist almost entirely upon larvae of other species of mosquitos, and failing these devour their own brethren. Experiments carried out by one of us (A.I.) some years ago appeared to prove that the adult *C. tigripes* does not suck human blood, and if this is indeed true there is no reason for destroying this large and conspicuous species on the score of its being harmful to man.

During the last five months of the year a few adult mosquitos collected in houses in Accra were submitted for identification by the Sanitary Department. Altogether 286 specimens were received and examined, the identifications are shown in Table VI. It will be observed that a single month, August, furnished 80 per cent. of the total number of mosquitos collected, and as a matter of fact

nearly the whole of them were *Culex fatigans* taken by one collector upon the 30th of August in the Prison, so that the table cannot be regarded as a reliable indication of the seasonal distribution of species in Accra. It may, however, be pointed out how few *Stegomyia fasciata* seem to roost indoors during the bright hours of daylight. This is the more remarkable when one considers that their hatching places, in Accra at all events, are chiefly small collections of water in and about houses.

TABLE VI.—ADULT MOSQUITOS TAKEN IN HOUSES IN ACCRA.

Species of mosquito.	August.		Sept.		Oct.		Nov.		Dec.		Totals.		Percentage of each species in samples.
	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	
<i>C. fatigans</i> , Wied ..	142	77	5	4	6	1	3	—	3	—	159	82	84.5
<i>S. fasciata</i> , F. ..	2	1	—	—	—	—	—	—	1	—	3	1	1.4
<i>Och. irritans</i> , Theo ..	—	—	2	6	3	4	—	—	—	4	5	14	6.6
<i>C. thalassius</i> , Theo. ..	1	—	4	2	—	—	2	1	—	—	7	3	3.5
<i>A. costalis</i> , Loew ..	5	1	1	—	—	—	1	—	—	—	7	1	2.8
<i>A. funestus</i> , Giles ..	—	—	1	—	—	—	—	1	—	—	1	1	0.7
<i>Banksinella lineatopennis</i> , Lud	—	—	1	—	—	—	—	—	—	—	1	—	0.3
<i>C. quasigeliidus</i> , Theo ..	—	—	—	—	—	—	1	—	—	—	1	—	0.3
Totals	150	79	14	12	9	5	7	2	4	4	184	102	

TABLE VII.—THE RELATIONSHIP OF RAINFALL AND THE COMMONEST SPECIES OF MOSQUITOS FOUND IN SAMPLES SUBMITTED BY THE SANITARY DEPARTMENT.

Year.	Rainfall in Inches.	Number of samples of mosquito larvae submitted.	Percentage occurrence of the six commonest mosquitos found in the samples submitted.					
			<i>S. fasciata</i> , F.	<i>C. fatigans</i> , Wied.	<i>C. decens</i> , Theo.	<i>C. thalassius</i> , Theo.	<i>C. tigripes</i> var <i>fuscus</i> , Theo.	<i>A. costalis</i> , Loew.
1917 ..	44.2	457	77.3	22.8	0.4	0.4	0.4	1.0
1918 ..	32.37	637	78.7	17.52	5.42	1.35	0.15	5.6
1919 ..	20.4	801	90.6	11.0	1.2	0.6	0.4	1.0
1920 ..	15.87	700	91.4	11.1	0.3	0.4	—	0.1
1921 ..	34.43	532	71.6	22.9	1.8	2.6	2.2	2.2

It is interesting to compare the percentage occurrence of mosquitos found in the samples of larvae forwarded by the Sanitary Department in relation to the annual rainfall. This has been done in Table VII. for the six most common species during the last five years. It is significant that when the rainfall is low the percentage occurrence of *Stegomyia fasciata* increases, while that of *Culex fatigans* decreases. It may be argued that *S. fasciata* adapts itself more readily to changes in its surroundings, but a more probable explanation appears to us to be that *S. fasciata*, which lays its eggs in small collections of water in compounds, especially water stored in domestic utensils, finds the conditions suitable for egg laying less altered in a season of diminished rainfall than does *C. fatigans* owing to the fact that there is in Accra a pipe-borne water supply.

Fleas were collected from time to time during the year from rats sent to the laboratory by the Sanitary Department, and latterly weekly collections were made and forwarded to Miss A. M. Evans of the Liverpool School of Tropical Medicine with a view to determining if there is a seasonal variation in their prevalence at Accra. Miss Evans has very kindly undertaken to forward month by month a list of identifications, and it will be most interesting to learn the results of her examinations,

The work of Cragg in India suggests that differences in the prevailing species of fleas of the Genus *Xenopsylla* upon rats in different districts may account for the anomalous distribution of plague in that country; where *X. cheopis*, Roths. is the prevalent species plague spreads readily, where *X. astia* is the predominant species plague does not spread readily. Evidence has been accumulating at Accra during the last two or three years that *X. cheopis* is not the prevalent species of flea upon *Cricetomys gambianus*, Waterh., the pouched rat, a species which in numbers nearly rivals *Mus. rattus*.

at Accra (to judge by the specimens sent by the Sanitary Department for examination), and which is by far the most heavily infested with fleas. The prevalent species of flea upon *C. gambianus* appears to be *X. aequisetosus*, End. If upon more thorough investigation this proves to be a fact it may account for the small tendency to spread which plague has hitherto manifested when it has appeared at Accra, for it is possible that *X. aequisetosus*, like *X. astia* in India may be a less efficient carrier than *X. cheopis*.

A species of bug, *Clinocoris hemiptera*, F., was taken on a specimen of *Cricetomys gambianus*. The occurrence of this ectoparasite in the fur of rats at Accra appears to be rare as they have not been found since 1917 (Accra Laboratory Report, p. 50). The gamasid mite, *Laelaps echidninus*, Berl. was taken once or twice upon *M. decumanus*. Its occurrence on animals at Accra has not previously been recorded so far as we can ascertain.

Specimens of an interesting fly with a highly chitinised proboscis were found in a collection of insects made by Dr. Corson at Koforidua in April, and in a collection of flies in a box in the laboratory which, although not labelled, had probably been made at Accra. This fly, which is commonly seen at the muddy margins of pools, etc., and is abundant in West Africa, apparently belongs to the same Genus, if indeed it be not actually the same species, as a fly recorded by the late Dr. J. M. Atkinson as preying on larvae of mosquitos at Hong Kong (Jl. Trop. Med. and Hyg. XVII., pp. 255). Atkinson states that the fly was identified as *Lispa sinensis*, Scheiner by Austen. So far as we have been able to ascertain no observation on its habits have hitherto been made in West Africa; it will be interesting to learn if they are similar to those of the Chinese species.

Further progress has been made during the year with the study of the biting midges (Ceratopogoninae) of West Africa and particularly of the Gold Coast. Three further papers containing descriptions of new species have been published, dealing with the Genera *Prionognathus*, *Atrichopogon*, *Dasyhelea*, and a number of others. On one specimen of *Dasyhelea nigeriae* contained in a collection of midges very kindly sent to us by Dr. W. B. Johnson from Nigeria (Northern Provinces) a number of small parasites were found which appeared to be gregarines. The parasites were attached to various parts of the surface of the body, antenna, thorax, abdomen, joints of legs, etc. This observation has added interest since Keilin (Parasitology, XII., p. 154) has described a species of gregarine, *Allantocystis dasyhelei*, which he found to be parasitic in the alimentary canal of larvae of *Dasyhelea obscura* at Cambridge in England.

(C)

A. LIST OF THE PAPERS PUBLISHED.

The following is a list of the papers published during the year by members of the Medical Research Department either alone or in collaboration with others.

A case of spontaneous rupture of the spleen in a West African, with reference to recent literature bearing upon rupture of the spleen and some comments thereon.

By A. Ingram,

Jl. Trop. Med. and Hyg., XXIV., pp. 164-168.

A case of myopathic muscular atrophy in a negro.

By J. F. Corson,

Jl. Trop. Med. and Hyg., XXIV., pp. 234-235.

A case of fever resembling Dengue occurring at Accra, Gold Coast. Notes of some similar cases.

By J. F. Corson.

Jl. Trop. Med. and Hyg., XXIV., pp. 255-257.

Observations on the Ceratopogonine midges of the Gold Coast with descriptions of new species—Part III.

By H. F. Carter, A. Ingram, and J. W. S. Macfie.

Annals of Trop. Med. and Parasitology, XIV., pp. 309-331.

Studies in the treatment of malaria—XXXI. The time of onset of the paroxysm in simple tertian malaria.

By J. W. W. Stephens, W. Yorke, B. Blacklock, and J. W. S. Macfie.

Annals of Trop. Med. and Parasitology, XIV., pp. 365-369.

Have differential leucocyte counts any value?

By J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie, C. Foster-Cooper, and H. F. Carter.

Annals of Trop. Med. and Parasitology, XIV., pp. 371-388.

Bronchomoniliasis complicating pulmonary tuberculosis in a native of the Gold Coast, West Africa.

By J. W. S. Macfie and A. Ingram.

Annals of Trop. Med. and Parasitology, XV., pp. 53-58.

The mechanism of autolysis in Paroxysmal Haemoglobinuria.

By W. Yorke and J. W. S. Macfie.

Brit. Jl. Exper. Pathol., II., pp. 115-130.

Observations on the Ceratopogonine midges of the Gold Coast with descriptions of new species—Part IV.

By H. F. Carter, A. Ingram, and J. W. S. Macfie.

Annals of Trop. Med. and Parasitology, XV., pp. 177-212.

Notes on some fungal infections in West Africa.

By J. W. S. Macfie.

Annals of Trop. Med. and Parasitology, XV., pp. 271-282.

A fungus of the genus *Nocardia* cultivated from heart blood.

By J. W. S. Macfie and A. Ingram.

Annals of Trop. Med. and Parasitology, XV., pp. 283-286.

West African Ceratopogoninae.

By A. Ingram and J. W. S. Macfie.

Annals of Trop. Med. and Parasitology, XV., pp. 313-376.

The effect of saline solutions and sea-water on *Stegomyia fasciata*.

By J. W. S. Macfie.

Annals of Trop. Med. and Parasitology, XV., pp. 377-380.

APPENDIX B.

 SHORT NOTE ON THE USE OF ANTIMONY ORALLY
 IN THE TREATMENT OF GUINEA-WORM.

During my tour at Winnebah in 1920, I verified in many cases the efficacy of Macfie's method of treating Guinea-worm by Intravenous Tartar Emetic.

Owing to the native fear of needles or knives, their love for a bottle of medicine, the time and care required in preparing for and doing intravenous injections, I decided to try Antimony orally.

A total of $4\frac{1}{2}$ to 6 grains being the usual course given by the more active intravenous method, I calculated that at least 10 grains or more might be needed by the less energetic oral route. The following mixture was prescribed :—

R/

Potass Antim. Tart. gr. X
 Sodae Bicarb. Drachm ii ss
 Aq. ad. Ounce X.

The bottle was specially marked with a strip of paper showing ii Ounce divisions. The patient was instructed to pour ii Ounce every morning into an empty whisky bottle and to fill up with water. He was told to consume this mixture during the day. He was to take it in small quantities as quickly as he could. i (Ounce every five minutes if he could stand it) without causing nausea or vomiting. My object was to introduce two grains in as concentrated a manner as the method permitted daily for five days in succession and to observe results.

In 1920, in Winnebah, I first tried the method and the results were good. Pain and swelling were relieved and in several cases one such course caused the death of the worm. Others needed a second course immediately after the first and in some the vein had to be resorted to in the end.

In this district Guinea-worm causes a good deal of sickness and I explained this oral treatment to the District Supervisor of the Preventive Service (Captain Braddick). I issued him 10-grain powders of Tartar Emetic and full instructions for preparation and use.

He reported that he had treated his Preventive Service men sick with Guinea-worm according to instructions with most satisfactory results.

I have treated a series of cases here in the prison myself with good results. The conclusion arrived at is that the results are sufficiently satisfactory to warrant a more extended trial.

Owing to the possible risk of Antimony poisoning I should not recommend more than two consecutive oral courses of 10 grains. If the worm is not killed after the second course the vein should be used : 26 grains in all—which is within the toxic limit—will not then be exceeded.

D. DUFF,

Medical Officer,
 Quittah.

APPENDIX C.

ANNUAL REPORT OF VENEREAL CLINIC IN ACCRA NATIVE HOSPITAL, 1921.

GENERAL REVIEW OF THE WORK DONE DURING THE YEAR.

Following my interim report on the 31st March, and the work during the year under review, I may, say, that good progress has been made in developing the scheme of treatment of venereal diseases. The aims of the year's work have been particularly to impress upon the general public the seriousness of venereal diseases; and the necessity, for an early and continuous treatment. This year's report, will show signs of real progress in a good many directions, though of course it indicates the difficulties with which one has to be confronted; difficulties which ought only to stimulate one to still greater exertions and if I have not accomplished all that we had hoped for and all that we might have wished, the reasons are mainly these; that we are not combating an ordinary ailment which afflicts mankind, but we are fighting against a special group of most insidious diseases which brings so many complications and complicated considerations into play, that renders any handling of them peculiarly difficult.

In the first place those considerations are not only pathological but also social and psychological, and when one considers that fact one understands the special difficulties which confront work of this Department. The Clinic was launched out towards the middle of February of this year in the Native Hospital with the following accommodation and Staff:—

Accommodation.—Consulting room, waiting room, irrigating room for men, irrigating room for women.

Staff.—Dispenser or an Assistant. Female nurse to control irrigating for women, male nurse to control the irrigating for men, one labourer.

Accommodation. On the arrival of the Government Dentist who was originally occupying this room in the Native Hospital the irrigating room for both male and female were disorganized. The Medical Officer in charge of the Native Hospital, however, arranged for an accommodation for the men, but this room could not be conveniently utilised for the women with the result that there has been a diminution of the daily attendance of the women, a fact which is most regrettable as the daily attendance of the women since the Clinic was started has not been encouraging enough as one would have expected due no doubt to the usual sensitiveness of women coupled with the fact that they feel shy in attending the Clinic at the General Hospital for fear of being seen. I am hoping, however, that the result obtained this year will induce better attendance in the coming year. The whole problem of treatment of female patients for venereal diseases will require in future some classification.

Staff. Not until April before the Clinic was equipped with the full complement of Staff. There was, however, temporary inconvenience caused by the resignation of the female nurse in September, but her place has been since re-filled.

Propaganda Work. The initial activities of the programme of this part of the work have been a distribution of 7,000 leaflets in Ga, Twi, and Arabic languages all over the Colony explaining the seriousness of venereal diseases and the necessary precautions to be taken. One public lecture was given during the year to a male audience and the lecture was published in English and in Twi languages respectively. 1,250 copies were distributed free throughout the Colony. Two addresses were given during the year to the Kroo and Hausa sections of the Community. Steps were taken to enlist the co-operation of all the medical men in the District by forwarding to each forms to enable them to direct all venereal cases to the Centre and in this connection my thanks are due to Dr. O'Brien, the Officer in charge of the Native Hospital, Mrs. Beveridge, Drs. Annan and Nanka-Bruce who directed some of the cases to the Centre.

Treatment. This has been free throughout the year to all patients who attended the *Clinic*.

No. of attendances. 5,651.

No. of Patients treated. 464.

I. No. of Gonorrhoea patients : 284.

No. ceased to attend Clinic.	Gonorrhoea Men.	Gonorrhoea Women.	Remarks.
(a) Before completing course ..	93	6	93 ceased
(b) Completing course but before test	113	8	148 cured
Final test	27	—	

II. No. of Syphilis and Framboesia patients : 180.

No. of Injections of N. A. B. and Mercury : 800.

	SYPHILIS.		FRAMBOESIA.		Remarks.
	Men.	Women.	Men.	Women.	
No. ceased before completing full course	52	2	23	12	89 ceased
No. completing full course	10	6	6	4	26 full course.

III. No. of Soft Chancre treated 12.

In-patients. There were few admissions into the hospital during the year. Those suffering from Syphilis, however, were admitted to the casual ward.

Total number admitted were as follows :—

Gonorrhoea, Male 10, Female 3.

Syphilis, Male 6, Female nil.

Laboratory Report. There was a certain amount of difficulty in demonstrating the Sp. Pallida at the Clinic due to the fact that most of the patients before coming to the Clinic had already applied either antiseptics or native medicines to the sore which render it difficult to demonstrate the organism, coupled with the absence of a mechanical stage to the microscope. There were fortnightly Wassermann Tests done during the year by the pathologist; the total specimens examined was 50. The number of dried specimens (Eagrams' test) examined during the year was 122.

RECOMMENDATIONS.

Accommodation for admissions. If this could be arranged, I suggest respectfully that a special hostel should be erected in the native hospital to accommodate at least eight patients, five beds for the male and three beds for the female, as this provision will in my opinion give a better control over those cases coming from a distance who cannot owing to difficulty of living in Accra attend the Clinic regularly.

Propaganda Work. It is most desirable that in the coming year a Propaganda Committee should be formed to assist in educating the public on the lines embodied in my suggestions submitted to the Government before the Clinic was started. An occasional press publicity as to days and place of the "Centre" will in my opinion be useful.

Legislation. This important field of action is at present untouched. Such a case as this must necessarily be of controversial character and that accounts perhaps for the timidity which has been manifested in regard to it, but I shall be very much surprised if enlightened public opinion does not before long demand legislation in this country as it has done elsewhere. Meantime I put forward the following views as embodied in my proposals and suggestions to the Government, viz. : (a) legislation for the prohibition of sales of drugs purporting to cure venereal diseases except by a qualified doctor ; (b) notification by disenclosing at the Centre the person suspected to be the source of infection and to trace the party for compulsory examination and treatment : (c) no counter treatment by druggist.

C. E. REINDORF, M.B.,

*Temporary Medical Officer,
Venereal Clinic.*



